









## UCD VETERINARY MEDICINE

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Selected Recollections of the Founding and Early Years of  
the School of Veterinary Medicine at the University of  
California, Davis

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A Publication of the Oral History Office  
Special Collections Department  
Shields Library  
University of California, Davis







## FOREWORD

### ORIGINS OF THE UC DAVIS VETERINARY SCHOOL ORAL HISTORY PROJECT

In the 1930's and 1960's, with the approach of the centennial anniversary of the University of California System, a growing concern to preserve a record of the past and its accomplishments led to the establishment of university archives at all campuses, and ancient oral history programs at Berkeley and UCLA. As an outgrowth of these events, an Oral History Office, which began to release publications in the early 1970's, was established in the Special Collections Department of the University Library on the Davis campus.

The UCD Oral History Office took as its mandate the preservation of the living recollections of campus pioneers. This was particularly appropriate since, as a relatively new campus (at the time) many of these same pioneers were still alive and in positions of responsibility within the University.

It was therefore fitting, when, in 1974, Chancellor Emeritus Earl Mack, W. R. Richard, Dean of the School of Veterinary Medicine, and A. I. Dickman, Director of the Oral History Office, concluded jointly that "Because time quickly erases awareness of facts and faces, it seems most appropriate that the early history . . . [of the Veterinary School] be recorded while many of the prominent participants were still living . . ." (quoted by Dickman in a memo to Chancellor Mack from the preface to the *History of the Veterinary School*).

The Veterinary School was UCD's first professional school. Approved by the California State Legislature in 1941, the School began offering classes in 1942. In 1950, the School's first facility, Haring Hall, was completed. By 1974, the UCD Veterinary School had become world famous, particularly for the quality and diversity of its disease control research and its innovative teaching theories.

In a memo to the Board of Regents dated May 22, 1974, A. I. Dickman outlined his

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Thanks are due to the following: Andy Pappas, Dean Richard, Kenneth Reynolds, Earl Mack, Bob Drown, Dean Jasper, Dr. Logan J. Miller, Dean Richard, to name but a few.



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The UCD Oral History Office took as its mandate the preservation of the living recollections of campus pioneers. This was particularly appropriate since, as a relatively new campus (at the time) many of those same pioneers were still alive and in positions of responsibility within the University.

It was therefore fitting, when, in 1974, Chancellor Emeritus Emil Mrak; W. R. Pritchard, Dean of the School of Veterinary Medicine; and A.I. Dickman, Director of the Oral History Office, concluded jointly that "Because time quickly erases memories of facts and faces, it seem[s] most appropriate that the early history . . . [of the Veterinary School] be recorded while many of the prominent contributors were still living . . ." (quoted by Dickman in a memo to Chancellor Mrak from the preface to the Jasper history of the Veterinary School).

The Veterinary School was UCD's first professional school. Approved by the California State Legislature in 1941, the School began offering classes in 1948. In 1950, the School's first facility, Haring Hall, was completed. By 1974, the UCD Veterinary School had become world famous, particularly for the quality and diversity of its disease control research and its innovative teaching theories.

In a memo to Chancellor Emeritus Mrak, dated 22 August, 1974, A.I. Dickman outlined his concept of the projected Oral History of the Veterinary School:

"It is, of course, sad to realize that many, if not all, of the founding group are deceased including R.V. Garrod who died last year, Dean Haring and others. However it should be possible to interview and tape record many of the living persons who are important figures in the history of the school. These would include among others, H.S. Cameron (who is ill), Oscar Schalm, Andy Peoples, Dean Hutchison, Knowles Reyerson, Emil Mrak, Bob Downie, Dean Jasper, Dr. Logan Julian, Dean Pritchard, to name but a few . . ."



Dickman hoped that the work might be completed in "1976 [which is] the 30th anniversary of the school." But he was not unmindful of the cost in both dollars and effort and concluded that "the work could progress as funds allow." In the end, the work--plagued by underfunding, the demise of a number of the principal participants, and Mr. Dickman's own untimely passing-- followed a fifteen year odyssey. As a result, when work was resumed on the history, in January, 1989, it was discovered that the De Ome, Schalm, Peoples, and Cameron interviews were never completed and because of this are not contained in the present volume.

However, the eleven interviews that are completed provide an accessible record of the formation and early years of the Veterinary School for historical and scholarly purposes.

Oral History Office  
Department of Special Collections  
Shields Library  
University of California, Davis  
April, 1989



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## Emil M. Mrak

### Interviewer's Notes:

Emil Mrak served as UC Davis chancellor from 1959 to 1969. His remarks were extracted from his memoir *A Journey Through Three Epochs: Food Prophet; Creative Chancellor; Senior Statesman of Science*. Ed. by A. I. Dickman. Davis, California, 1974.

### Curriculum Vitae:

1901 -- 1987

Chancellor of UCD; 1959 - 1969

Professor, Davis; 1951 - 1959

Professor, Berkeley; 1948 - 1951

Instructor, Berkeley; 1937 - 1948



## Emil M. Mink

## Interviewer's Notes:

Emil Mink served as UCD's chancellor from 1959 to 1969. His remarks were extracted from his memoir *A Journey Through Three Epochs: Food, Progress, Creative Change*, *Seeds, Sustenance of Science*, Ed. by A. I. Dickman, Davis, California, 1974.

## Curriculum Vitae:

1901 - 1987

Chancellor of UCD, 1959 - 1969  
 Professor, Davis, 1951 - 1959  
 Professor, Berkeley, 1948 - 1951  
 Instructor, Berkeley, 1937 - 1948



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## Emil M. Mrak

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### Vet Med Oral History

The vet school--it's rather interesting. When I became chancellor some of the faculty members who were on important committees said to me, "Don't trust the vet school." It wasn't long before I found that the vet school was one of the great assets of our campus. I thought it was one of the things that could help make the campus great because it was the only one in California and one of the only two on the West Coast. So I didn't take what they said seriously. But then, when we looked at the vet school we found it had no hospital; so it was just like if you're building a medical school and construct a building for all the sciences and don't have a hospital or any place where you have sick humans.

In fact, it became clear to me we'd built the thing absolutely backwards. This plagued me for a long time. The question was, "How were we going to get an animal facility?" Then we got to looking at our academic plan, looking ahead in biology--this campus was strong on biology--and we anticipated a great increase of enrollment in biology. Then the question was, "Where are we going to put all these students and faculty if we develop in biology the way we think we will?" Then, if we started locating buildings in a geographic area where other biology departments were located we'd soon have the vet school surrounded and we couldn't even build a hospital if we wanted to.

Then the thought came to us, and I think it really was a fellow named Rogers who worked on statistics, requirements and things, who suggested we do what we did. Rogers was then with Terry Suber out in the physical plant. Later we moved him in with Mahlon Cook, but I inherited Rogers. He was a good man; I hated to see him leave. Ed Spafford, too, was heavily involved in the idea. We concluded the only thing we could do was take the present vet school, convert it into biology, and build a new vet school. That's where the whole thing started; that's when we really started thinking about it and said, "Look we don't want to make the same mistakes we made the last time, so let's start out by



building the hospital." If we had the hospital, then we could build the other buildings and gradually move into them. So, we built the hospital and apparently it's an excellent one. In the meantime, as we got ready for the next increment, funds started drying up and costs started going up. I remember talking about \$15, \$10 million; and we kept delaying and delaying. When I left we were talking about \$35 million. I don't know what the cost is now.

We had an awful lot of trouble in the design, the location, the change, but we were able to sell this state wide. You know, if you have a vet school, and you suddenly tell the statewide University and the legislators that you want a hospital, they say, "Well, you've got a vet school," and let me tell you, this took some selling! It really took some selling! And to say that ten years ago we did it all wrong wasn't easy. Well, then, when you get the hospital and say you want a building for basic sciences, that's not easy, either. But we could say we were being pushed off the campus by biology and that was all right.

In the meantime, the medical school came into the picture--we had to consider planning for this. Well, we decided we would put the vet school and the med school along the highway going to Woodland, on the west side of the main campus. And what about putting the vet hospital on one end, the south end, the medical hospital on the north end, and in between, one building for both medical and veterinary sciences? Well, the veterinarians were scared to death of them. I don't know whether they still are or not. There's probably some reason for it. But I think they could and should work together; they could support each other. And actually, Dean Tupper did help an awful lot in supporting increased salaries and other things for the vet school. I think he did this because he knew the veterinarians were afraid of him, and I kept prodding him and saying, "Look, we've got to have friends." So, he went overboard. But I can't say the veterinarians helped us any in this way.

And, so it goes, but we did finally got the vet hospital, and I think it's a very fine one. We got lots of federal money to build up facilities south of state highway 5 for the School of Veterinary Medicine but we still need our basic sciences building for medicine and veterinary medicine. The veterinarians had a library; the medical school wanted a library and the compromise here was to combine the two. I think we have a great Health Sciences Library; people from San Francisco come up to use it.



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## Claude B. Hutchison

### Interviewer's Notes:

This interview with Vice President of the University Emeritus, and former Dean of the College of Agriculture, Claude B. Hutchison, is a combination of a portion of his oral history memoir with interviewer Willa Baum of the Regional Office of Oral History, Berkeley in 1960, and an interview on November 25, 1974 with interviewer A. I. Dickman of the Oral History Center, Davis.

### Curriculum Vitae:

1885 -- 1980

**Vice President**, University of California; 1945 - 1952

**Dean**, College of Agriculture; 1930 - 1952

**Director**, Agricultural Experiment Station; 1930 - 1949

**Director**, Giannini Foundation, UC; 1928 - 1930

**Instructor**, UC; 1922 - 1924



## Claude B. Hutchison

## Interviewer's Notes

This interview with Vice President of the University Hutchison, and former Dean of the College of Agriculture, Claude B. Hutchison, is a combination of a portion of his oral history interview with interviewer Willis Hume at the National Office of Oral History, Berkeley in 1980, and an interview on November 12, 1974 with interviewer A. J. Dickman at the Oral History Center, Davis.

## Curriculum Vitae

1922 - 1950

Vice President, University of California 1945 - 1952  
 Dean, College of Agriculture 1933 - 1935  
 Director, Agricultural Experiment Station 1930 - 1933  
 Director, Oregon Forestry NC 1928 - 1930  
 Instructor, UC 1922 - 1924



## Claude B. Hutchison

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### School of Veterinary Medicine

#### Early Background

*Before you had a School Of Veterinary Medicine you had a division of veterinary science in the Agricultural Experiment Station. Now exactly what was that?*

I guess Hilgard was the man who started veterinary work in the University. Veterinarians were added to the staff of the College of Agriculture to concern themselves with animal diseases. In the early days there was a little instruction, primarily for animal and poultry husbandry students rather than for the training of veterinarians. California's first attempt in veterinary education was a private veterinary school established and maintained for several years in San Francisco. In the field of veterinary medicine, just as in human medicine, the early developments were in private schools here in the West. That veterinary school didn't last long and for many years California depended upon other states to train her practicing veterinarians.

*Was there much of a science of veterinary medicine then?*

There were some reasonably good beginnings, but at the time the San Francisco school was started few had reached a level of distinction in this country. Veterinary colleges got started in Europe and were by and large created by the military for the



cavalry. Maria Theresa established the one in Vienna and during my period abroad with the Rockefeller group I visited it. That school was established about 1750 and has been going ever since. The same was true in France and Germany. The principal veterinary school in France just outside Paris was an army development, and in this country we had a veterinary corps in the United States Army up until World War II when they abandoned cavalry.

*Veterinarians inspect food too, don't they?*

Yes, the old bureau of animal husbandry of the USDA had charge, still has charge--it's under a different name now--of meat inspection throughout the United States. We here in the University and in our State Department of Agriculture at Sacramento cooperated with that bureau over the years, not only in the control of animal diseases, but also in meat inspection and development of techniques and research that was necessary to improve techniques of meat inspection.

Our division of veterinary science, at the time I came to the University, was generally regarded throughout the United States and even abroad as one of America's most important veterinary centers. When I was on the European staff of the old International Education Board one of my duties was to make a survey of veterinary education and research in Europe, so I had the opportunity of visiting all the important veterinary colleges of Great Britain and on the Continent west of Russia. They had another man doing the same thing here in the United States.

### **Demand for a Veterinary School in California**

Then, just before World War II, an interest began to develop here among the livestock people of California for a veterinary school or college in California. At that time there were some ten, I believe, veterinary colleges in North America. One of them was in Canada, the others were in the United States. And there were but two of them west of the Mississippi River, or was it three--Colorado State and Washington State and Kansas State.

*And Texas A&M. This was in 1940.*

The USDA had said that the nation needed at least one or possibly two more, and I suggested California and Illinois as good places to establish them.



You see, California depended upon other states to train and produce its veterinarians, and if the University of California wanted to enlarge its veterinary staff it had to go to the East. The State Department of Agriculture had to go at least to Colorado or Washington State. Furthermore, for local practitioners, a community that felt it needed a veterinarian would have to go elsewhere to find someone, or if a livestock association wanted to employ a veterinarian. And individual practitioners were always people who came from elsewhere to California and settled down.

*What occupations did the division of veterinary science train men for?*

It didn't do any training. It was strictly experimental, strictly a research group. Oh, we had a man stationed up at Davis in the division to give some instruction in veterinary medicine to animal and poultry husbandry students, and a man from the division of veterinary science doing research in poultry diseases would sometimes lecture, as would others on the Experiment Station staff of the division of veterinary medicine, to the classes in animal husbandry and poultry husbandry. We were training no veterinarians *per se*.

*Was there any training for food inspection?*

No, there wasn't.

So there gradually grew up a demand here for a veterinary college in California. The livestock people and the State Department of Agriculture and the State Board of Agriculture took the initiative. We, of course, were in on it too, but I think it's fair to say that the College of Agriculture was urged a bit by the demand on the part of the livestock industry of the state. These people took the matter to the legislature.

I well remember that just prior to the war they approached the legislature. They had a bill introduced into the legislature and I was asked, together with Dr. C. M. Haring, who was in charge of the Division of Veterinary Science, and others of our veterinary and animal husbandry groups in the college to appear before the committees in the legislature to speak in favor of an appropriation to establish a School or College of Veterinary Medicine in California.

Well, local interests in other states began to think, "Well, if that's good for Illinois and California, it's good for us." This resulted in a great increase in the number of veterinary colleges immediately following the war. I don't know how many they have now, maybe too many. [Laughter.]



*I've read of the need for them before the war, but then I read a comment by Dean Mann that there were already too many veterinary colleges.*

Well, I don't recall that but I think Mann, my immediate supervisor at Cornell and a warm personal friend for years--no longer living--might have been willing to modify that statement to the extent of saying the schools and colleges of veterinary medicine were not distributed well in the country. Four of the best; Cornell, Pennsylvania, Michigan State, and Ohio State, were all in the northeast corner of the United States, with Canada's single school at Guelph not far away. So there certainly wasn't any need for any more in the northeast quarter of the United States. But Mann perhaps did not realize as well as some of us living here in the West how sparsely, how inadequately, this great range area of the nation was supplied with veterinarians, and certainly at the time he made that statement he didn't realize how much we were at that time actually using veterinary science in the great poultry industry of this state, to say nothing of the cattle and sheep industries.

I agreed with the statement of Dr. John R. Mohler, Chief of the Bureau of Animal Husbandry of the USDA, that two more colleges--Illinois and California--could, with the other nine then existing, meet the nation's needs. But we ended up with more, several more, and I doubt if any of them will be abandoned.

*It was from agricultural groups, wasn't it, that you got the impetus to establish the school?*

Yes, they were back of it and supported us. And when I say agricultural I mean primarily livestock and poultry people and dairymen.

*Did they have associations that lobbied for the establishment of a school?*

Yes, and farm bureau people supported us because many of their members were in the livestock, dairy and poultry business. I would say there was a very substantial and widespread recognition on the part of the California farmers that we needed in California a School of Veterinary Medicine, and national reputation of the University was so pronounced that everyone concerned with this field at the national level said, "Yes, the University of California will be a good place to develop another School of Veterinary Medicine."



I remember that the then chairman of the Ways and Means Committee of the assembly came from some county in the northern Sacramento Valley, and he was trying to needle me a little bit. Seth Milligan was his name, and he was quite a character in the legislature for several years. Well, one night I was before the Ways and Means Committee, which was considering this appropriation, and I had told the livestock people who talked with me about this matter that they should ask for a million dollars as the initial appropriation to start the school, because we had to have buildings and laboratories and corrals, but that it would ultimately need not less than two million to complete it.

I said, "I don't want to have anything to do with anything but a first-class School or College of Veterinary Medicine, and the University of California, I'm sure, doesn't either. And I'm quite certain that the people of California can't afford to have anything but a first-class institution, and the minimum to start with is a million dollars."

Mr. Milligan, Chairman of the Ways and Means Committee, came from the northern part of the Sacramento Valley. He rather kidded me--that evening--by saying, "Why do you want a School of Veterinary Medicine in the University? A tractor doesn't have glanders. Well, that rather interested me, and I said, "Mr. Chairman, of course a tractor doesn't have glanders, but even in your community there must still be some horses used; and I know not far from your community there is a lot of livestock; sheep and cattle on the ranges, and some of those have important diseases. And some of those diseases are even transmitted to men, and we want to study those diseases with the hope that we may find ways and means of not only protecting the sheep and cattle and other farm animals, but also us human beings."

*Did that answer satisfy him, do you think?*

It seemed to. Well, that was toward the end of the depression and money was not nearly as plentiful--a million was a lot of money then. So they finally ended up by giving me a half-million dollars and they said, "Now, Dean, if we give you a million dollars now, for this coming biennium, you can't spend it all in the next two years, can you?" And had to admit, "No." Because it'd take time to plan the buildings and get all the plans made and the contract let and the building built. So they said, "All right, we'll give you half of that and you come back two years from now and we'll give you the other half."

Well, that didn't appeal to me much for that meant at least three starts; one now, one two years hence, both for a half-million, and more later. But that was the decision. I think that was in the 1939 legislation. And before we could get back for the second half-million we were at war. So it stayed there for a time, that [first] half a million, which was not spent. But the legislators remembered their promise and they boosted it to a million dollars the next time it came--at just what time during or immediately following



the war, I've forgotten. And then, prices began to go up so rapidly that the building and facilities that I, with all the best advice that I could get from our own University engineers and architects, thought we could build for two million dollars, ended up at costing pretty close to five million. It grew a bit in magnitude too. It grew from around two million to something a little less than five million. Before we got the plant built at Davis, the University's post-war building program had gotten underway and the legislature was recognizing that their previous appropriations and commitments were inadequate and they just automatically added a certain percentage increase on all appropriations. With those two factors we ended up with pretty close to five million for that plant at Davis.

*I think I saw somewhere that Sproul heard that your School of Veterinary Medicine was going to be passed, the appropriation, but that the University budget was going to be cut by approximately the same amount of money. He wrote to you asking you whether you wanted the School of Veterinary Medicine under the circumstances.*

I had forgotten it, but if it happened I'm pretty confident that I said, "No." I have never in all the years that I was Dean of the College of Agriculture and responsible for that portion of the University's activities encouraged anyone, or had a part of any movement, designed to enable me to build up my part of the University at the expense of some other part of the University.

*Was that common, that the legislature would try, when there was pressure for something, to put it in and cut somewhere else?*

I wouldn't say it was "common," but I would say that it sometimes happened.

### School Established at Davis

It's an interesting story, I think, as to how we finally came to locate the School of Veterinary Medicine at Davis. The war did us a service in this respect. It's hard for me to agree that war is ever good for anything, but the war might have done us a service.



I wanted veterinary medicine located at Berkeley, to have contact with the basic physical and biological sciences here, and I wanted it at Berkeley to have contacts with the medical school in San Francisco. Those were the primary things, but we recognized that any veterinary college had associated with it noises and smells and other things that the rest of the University wouldn't like. But the scientific contact was the one that was most important to me. I visualized the scientific laboratories being located on the main campus here with our clinical facilities, our barns and corrals, etc. on the Gill tract. Then war came on, you see, and we couldn't proceed with anything. But we kept thinking and planning.

Two things happened. Dr. Haring came in one day and he said, "Now, Dean, we've been talking about the scientific laboratories being built on campus and the corrals, barns, and clinics on the Gill tract. But that isn't going to meet all of our needs. We have got to have some pastures and larger corrals and paddocks and so forth. We will probably have to go out toward Walnut Creek for this." This was long before the great sub-division growth began in that area and there was still some vacant land there.

Well, that just clinched it. I said, "Frankly, Haring, I just don't see that. We've struggled here for years trying to develop the College of Agriculture in two places, at Berkeley and Davis. Now you tell me that we're facing a new development in veterinary medicine that has to be located in three different places. I don't think that makes sense. We've got to do some further thinking on this."

This is where the delay that came because of the war was so fortunate. By the time the war was over and construction material was available again, the University and the state officials could recognize the great migration of people was continuing to come to California, and that the University had to do something to take care of the greatly-increased student population that ultimately was going to reach it. We began to talk about expanding the work on two of my campuses, Davis and Riverside. And I said, "We can now locate in good conscience and with full confidence this new School of Veterinary Medicine at Davis, out in the country close to the livestock industry of the state. And we can have through the agricultural departments there and through the new College of Letters and Science, that scientific atmosphere and support and cooperation without which you can't have a first-class School of Veterinary Medicine." The veterinary school's need for support from the basic sciences is similar to agriculture's need for the same thing. That was why it was built there.

*Where did the main thrust come from to make Davis into a general campus and give it a Letters and Science Division?*



After the war, the University set up a committee (Monroe Deutsch, as I recall, was chairman) to develop plans for expanding the University's offerings because of the great influx in population. Berkeley and UCLA couldn't possibly take care of all those students; so the natural thing to do was to take these two outlying campuses that the College of Agriculture had been operating for many years, plus the State College at Santa Barbara, which prior to that had been taken over by the University. So there were three outlying campuses under the jurisdiction and a part of the University--two of them a part of the College of Agriculture. Everybody, naturally, thought of those first, to enlarge the University's offerings in those places. The best one--already the one which approached a general university campus more closely--was the Davis campus.

*Whenever departments left Berkeley for Davis, it created a natural kind of traumatic condition in the minds of those people who had been at Berkeley for many, many years, who didn't want to sell their houses and move to Davis. I suppose the heat at Davis was also a deterrent?*

We didn't have air conditioning in the University in those days [laughs].

*Do you remember specifically those members of the Division of Veterinary Science who didn't want to come, or those who did want to come? Who were the personalities actually involved in the move?*

I think the move concerned only one of them, and that was Professor Jerry Beach, because I said to the other people, "I'm not going to ask you to move to Davis. You have your home here; you have many more years to serve in the University. I'm not going to uproot you and move you to Davis. If you want to go I'd be happy to do anything I can to facilitate the move. But if I were you, I wouldn't do it."

The younger people naturally wanted to go to Davis; they hadn't been here for very long and they were ready to go to Davis--although there was one that I think, as I recall, didn't warm up to the idea, and he resigned from the Division of Veterinary Medicine. I've forgotten his name, but he is still active in the University.

I well remember talking with Jerry Beach one day, and I said to him; "What is going to happen here?" I gave him his choice of staying here with the older people or of going to Davis in the new location. I said to Jerry, "One of these mornings you are going to wake up feeling awful lonesome, because we're not going to replace anybody down here at Berkeley. When those people retire, that position's going to be moved to Davis and you're going to be awfully lonesome." He thought about it awhile, and decided to go.



*There was the tragedy of his death after a year or two. Some people in Davis feel that it was because of regret that he had left Berkeley. Do you think there is any connection?*

No, I don't think so. I don't know; I can't explain that tragedy. But I can't believe that it was because of regret.

*How did the move to Davis work out as far as contact with the medical school, Hooper Foundation?*

That, of course, is not as convenient as it would be if they were just across the street, but over the years in other ways we built that contact. We had one great advantage in that respect right from the beginning, in that Dr. Karl Meyer, who was director of Hooper Institute, his principal interest was in diseases that are transmissible from animals to man.

*I think he started out as a veterinarian, didn't he?*

Yes. His first degree--just like George Hart--was in veterinary medicine and then he went into medicine and he has degrees in both. George Hart did the same. And our people in veterinary medicine in this research activity in the Experiment Station worked in close cooperation with Karl Meyer. They were good friends and colleagues and worked together. So one of the first appointments that was made to the new faculty at Davis was a man that we got from Stanford University's medical school staff, perhaps with Dr. Meyer's help. He too was interested in diseases of animals transmissible to man. Through him and through Karl Meyer and other friends in the medical school who were interested in this enterprise and offered their full cooperation we've developed good contacts even though the campuses are 25 or 70 miles apart. The telephone is there and the comings and goings and visits go on.

### School Personalities

*Let's talk about your decision as to who would be the dean. C. M. Haring, as you know, was the first dean. Were there other candidates? I notice, for example, that George Hart, who was the second dean, was on many of the planning committees--the Curriculum Committee, the Building Planning Committee--did you have to decide between Hart and Haring as first dean?*



I had nothing to do with Haring's appointment as dean. That was done while I was in China--those few months in 1946. The School was not in operation; we had no money at that time, and we weren't doing anything. Haring was within, I think, one year of retiring.

I think Dr. Stanley Freeborn, who was acting in my place during my leave of absence in China made the decision. Perhaps other people also were involved. It was a sort of an honorary recognition of the long years of wonderfully fine service that Haring had given to the State and University of California.

Then, later on, after the war, when we began to get into this thing, oh yes, I searched this country carefully for someone who would take that post as dean of the new school.

One man I tried to get was the Dean of the New York State College of Veterinary Science at Cornell University, who was at that time recognized all over this country as, perhaps, the leading dean of veterinary medicine in the United States.

*Do you remember his name?*

Oh, I ought to. I knew him when I was on the faculty at Cornell; he wasn't dean at that time at Cornell, but he was, later on. Well, the reason he didn't come was that New York State had just established a retirement system. This man wrote me, or told me sometime (I think probably the letters are in the files). The retirement plan of California was not too good at that time--not nearly as good as it is at the present time. He felt that because of his retirement system--retirement compensation--it would be better for him to stay in New York. That was the reason he gave me for declining my offer. So I know he was interested; he saw the opportunity of starting something new out here, you know.

*This was prior to the time you appointed Dr. Hart as the second dean?*

Yes. Then when that was turned down, I turned to George Hart, because George had responded to our invitation, while he was on the staff of the Veterinary Division here, to go to Davis to take charge of Animal Husbandry. So I turned to George, and he responded in an admirable way. I've always been very grateful to George Hart for that.



*From several sources I have assumed that Dean Haring and Dr. K. F. Meyer were very close friends.*

Yes, I'm sure that was true.

*Would you say, then, that Dr. Meyer, through Dean Haring, may have been quite influential in some of the early decisions made about the Vet School?*

I would assume so. You must remember that K. F. Meyer's first degree was in veterinary medicine. Then he got a degree, in Switzerland, in human medicine. He has, therefore, all of his life, been interested in research, and supported sound medical and veterinary medical research here. He was a great man. I was awfully fond of him.

*Would you say that if you had to pick out maybe three of the top scientists for all time in the Department of Agriculture, that K. F. Meyer would have to be one of them?*

Yes. He was not connected with the College of Agriculture, but we regarded him as a member of our company.

*I understand that his relationship with George Hart was not nearly as close as it was with Dean Haring.*

I rather think that was true.

*Do you have anything on that?*

No. I can't speak with any definite knowledge of that. From my point of view, the relationship of those three men was always cordial and close. I can't say there wasn't something else happening that I didn't know about.



*If you will, we may do a biographical essay on George Hart. First, talking about George Hart, would you just let your mind go back to your relations with him and just say anything that would have any connection with George Hart? Any anecdotes, any illustrations, any contacts?*

The first thing that comes to mind was that George was one of the ten men that used to go fishing every spring. In those days the University had the two semester calendar--the best university calendar that any university ever had. It began in August, and the first semester ended before the Christmas holidays; then the kids went home for holidays and came back, and I think the second semester opened roughly in the middle of January; and it extended roughly until the middle of May.

Commencement was on Saturday, and Sunday morning five of us from Berkeley--President Sproul, Tom Putnam (who was Dean of Students), Jerry Beach (who was professor of veterinary medicine), Grover Turnbalm (who had been at Davis in veterinary medicine many years ago, but who had left the University and was in the dairy business here), and myself would get in a car and drive to Davis. At Davis there were five other men: George Hart, Denny MacLise (Comptroller), Ira Smith (his helper), Elmer Hughes (in animal husbandry), and (I can't remember the last one). Anyway, there were ten of us all told, and we would go fishing and spend the better part of a week right after commencement fishing up in the hills in various places.

#### *Dry fly fishing?*

Yes, some of them did. George Hart was a good dry fly fisherman. But the best fishing, from my point of view--I was never very good at casting--was when we'd go back to Buck's Lake. That was up in Placer County; PG&E built it. We would troll in that lake. George would sometimes take his flies and his casting rod and fish with that, but we did best by trolling--at least I did! [Laughs.]

I remember one time George and I were in a boat, and we would change places--one of us would row for awhile and the other one would run the two lines out; then we would change. We were drifting back and forth, apparently, across a school of trout. We would go through that school and catch two fish--a fish on each line. By the time we would haul those in and rebait the gear, we'd be back where we started from; and we'd pull through it again and get two more! We had, one afternoon, a great time in fishing [laughs].

But we had a lot of fun in those days, as well as recreation. We would have many conversations on California agriculture, the University's work, and everything that



we were all interested in. Then all of them, except myself--I never learned to play cards much--would go in after dinner and have a poker game, and have a lot of fun playing poker.

There has been more than one effort made by people who appreciated George, to have the Animal Science Building named for him. I've always had the greatest regret that it didn't happen. There must have been something that I don't know about happen there. I would guess that it must have been that strength of character or something--that he must have riled somebody--and it must have been more widespread on the campus than I know about. But it seemed to me so little, on the part of anyone who can't recognize, as I do--and I know animal husbandry and the early animal husbandry work in this nation. In fact at one time I, as an undergraduate, was a student assistant in animal husbandry one year--it must have been about my junior year. My senior year I was a student assistant in botany. Now, they might just have been reversed. But I've always been interested in livestock, and George Hart set a new standard of education and research in animal husbandry in this nation--in this country of ours. I know that to be true.

*And several of his appointees did some very important research; including Harold Cole and Max Kleiber.*

Surely. I told George Hart about Max Kleiber. I first found him in George Wiegner's laboratory in Zurich, Switzerland, and he came over here. At one time he became (now here's another thing) a bit discouraged. He was with George; now, maybe for a while they didn't click too well, or something had happened. One day when I was at Davis, Max came in to me, and he was on the point of resigning. I talked him out of it. When the faculty up there recommended him for an honorary degree, Max asked them to have me present him to the President for that degree. He said to me at that time, "You brought me here, and you kept me here."

*Do you recall anything about either Oscar Schalm or Hugh Cameron?*

I know we got Cameron from Cornell. Schalm was a very promising young man, I know. He made a good account of himself right from the beginning, and stood very high in our minds as an able youngster coming along. He wasn't quite old enough to take the responsibility of the deanship in those days.

*How about Dr. Jasper?*



Hart found Jasper. I may have had something to do with his appointment, but I had nothing to do with his selection. I had such confidence in George Hart that I would have taken anyone that he wanted.

*Do you recall anything about the dedication of the building that became named Haring Hall? Do you remember the dedication ceremonies?*

No, I wasn't at the ceremonies; I don't think I participated in them.

*Do you remember the occasion in Chicago when George Hart's portrait was hung in the Saddle and Sirloin Club?*

Yes, I was present at that.

*You were a major speaker, you spoke about George.*

Oh, I see. Yes, I have a hazy recollection of that event, but not in detail. That was a fine recognition of him, from the livestock people in the nation.

## Curriculum and Students

*I know you put in a lot of consideration of what kind of a course you were going to have, how long it was to be, what sort of emphasis you would put on it--*

There I must give credit where credit is due, to our veterinary staff, in particular to Dr. George H. Hart and C. M. Haring. Other members of the staff contributed too, but those two men took the leadership in the planning.

We were all agreed--I can't remember any discordant thoughts at all--that to do what we visualized would require not less than two years of pre-veterinary-medical preparation, plus a four-year curriculum in veterinary science. We organized the curricula in such a manner that the first two years were to be taken in the College of Agriculture



and the entrance requirements for that would be the same as the entrance requirements for the rest of the University. Then at the end of the two years we would have special entrance requirements for the School of Veterinary Medicine. At the end of four years they would get a bachelor of science degree in the College of Agriculture, and at the end of six years the students would win the degree of Doctor of Veterinary Medicine. I think that is still being done.

We've always had to limit the number of students admitted. The first class was forty and I think the next year we enlarged it to fifty. Currently I don't know how many they are admitting, but as the physical facilities, laboratories and so on, developed, they raised the number of students admitted in proportion to the number that could be adequately taken care of in the laboratories.

*Is this number set by the University's facilities, or do they try to balance it by what is the estimated demand for new veterinarians?*

No, it is set entirely by the University's facilities. We've never tried to anticipate demand or employment opportunities. I don't think that is a good criterion to use, except in a very general way, perhaps in determining the facilities that you have, and their magnitude. I like to think that anyone who is really qualified and who wants to become a veterinarian ought to have the opportunity to become one. Then, after they get out, it's up to them to get at the job of earning a living.

*Don't most of the schools of veterinary medicine limit the number of students from out of state that can attend?*

Yes, they do that. First they limit the total number they can take care of and then there is sort of a gentleman's agreement among them that they will have a few places for out-of-state or out-of-nation applicants. When we first started here, as I recall, out of forty we reserved something like five for out-of-state, and even in those days we talked about Hawaii as one of the states and provided for at least one from Hawaii if there was a qualified student who wanted to get in--but he still had to compete with all the 450 or so applicants. We took only about one in ten. The ratio has now perhaps narrowed down a little bit, for there was a great backlog of student applicants immediately after the war. We've always recognized our responsibility to the rest of the nation too because we, for many years, had to depend upon Cornell, Ohio State, University of Pennsylvania, and maybe Kansas and Washington and Colorado to admit students from California who wanted to study veterinary medicine. A little reciprocity has been developed here.



*How accurate are your techniques for screening applicants? When you have so few places and so many applicants you want to try to get people who will finish successfully and stay in the profession I should think.*

Yes. Well, some of my colleagues who have served on these committees are better qualified to answer that than I am. But in a general way I would say that the first criterion is a good high school record, high school grades good enough to get into the University. What these students have done while they were in the College of Agriculture in our University, and the transcript of record they offer if they come from a junior college or other university--after all, I don't suppose we have anything better than grades to measure a student's accomplishments.

Then interviews with these students. They are all interviewed and the committee on admittance tries to form some judgment of their intellectual capacity and their personality and so forth, and that plays a role in admission.

*I wondered if you'd had a good measure of success in taking in people who really did get through the course and entered the veterinary profession?*

Oh yes. I don't know what the statistics would show. But I know a number of young graduates who are practicing. We aren't just trying to develop practicing veterinarians, however, by any means, and we're not disturbed when a fair share of them turn out to be interested in veterinary science and want to continue, to teach, to do research. Such men as that are always scarce, we never get too many.

*I should think it's a profession that there would be many side avenues for which the training would be valuable.*

Yes, a very broad field.

*Did you plan to train veterinarians for small pet hospitals?*

Yes. That has been, in recent years, perhaps the most lucrative type or field of practice. So, when we set up the veterinary school, because we had far more applicants than we could admit we wanted to be sure--as sure as can be--that we were going to



turn out some of what we called "crossroad veterinarians," people who would be interested in locating in the rural areas and being available to the livestock people. When we interviewed these students, as an entrance requirement, those who expressed an interest in rural matters got maybe some extra points on this examination. We gave a little preference to those.

*Is it economic for veterinarians to treat livestock?*

Yes. But in the early days in planning our curriculum and our school procedures we tried to emphasize first preventive medicine rather than curative, and to emphasize the welfare of the herd and the flock rather than the welfare of an individual animal. Very often the practice of veterinary medicine will differ from the practice of human medicine in the sense that we are thinking of the welfare of the total flock and of the total herd rather than of the welfare of the specific members of it. In curative you are trying to cure each individual and in preventive you can kill them all, you see, to find the diagnosis and to apply the cure.

The best example of that wholesale killing I can think of is in our procedures for handling foot and mouth. We've killed off whole herds. I remember in the 1924 epidemic of foot and mouth disease in California of going down to a San Joaquin ranch one time where they brought bulldozers in and dug a trench ten or twelve feet wide and ten feet deep, ran the diseased cattle down into that, and had men walking around the edges with rifles, killing each animal. They put lime over the carcasses and filled up the trench. That's pretty radical treatment, but it does eradicate the disease--not to cure the animals, you see, but to get the disease completely out of the United States so it couldn't spread. Then they would go on to disinfect all premises, barns, corrals, where those animals were, to kill off all the germs, all the virus that could possibly spread to adjoining herds.

The veterinarians use the techniques of preventive medicines I would say, quite as much as curative. On the other hand, suppose you had a very valuable breeding animal, a very valuable race horse--and when you come over into pets, the dog in any family is often a very important, if not valuable, individual--here people are quite willing to pay for a curative procedure for that individual, just like they'd call a physician in if one of the children got whooping cough or something else. Therefore treatment of pets is often the most lucrative practice in veterinary medicine. We know that our veterinarians, our graduates, are human beings, and they like money as well as anybody else, so we wanted to make certain that we would turn out some well-trained and able veterinarians who would want to live in the country and practice with and on farm animals.



One thing that I can think of that we did talk about and plan for and put into operation, and which marked a distinct change in curriculum, was our determination right from the first to put less emphasis on anatomy. When you go back to the German and European schools in the early beginning, anatomy was the basic science taught and, in the minds of our veterinary people like Mr. Hart and Dr. Haring and their associates, overemphasized. They resolved early in the planning of this work that they would not require students to take anatomy for every year they were in school, so as to have more room and more time for some of the other medical sciences.

### Administration

*I know you had a lot of problems in how to administer this school--was it going to be a college, a school, or a department--? [Laughter.]*

Yes, those were some things that we talked about. But they were not troublesome.

You see, the veterinary school had to be accredited by the American Veterinary Medical Association, which had a committee on accreditation, and they would visit these schools, examine the facilities and the curriculum, maybe even the faculty, and then decide whether to give this school an "A" rating or a "B" rating or maybe a "C" rating. Committees of professional associations are, in my judgment, not always the best mechanism for really measuring the scientific and academic attainments of a given school. They sometimes set up a criterion to be met that is not always of as great importance as some of these committee or association members might think.

In veterinary medicine in those days they had certain requirements which seemed to some of us were not well founded. For example, they wanted to disassociate the veterinary school in any university organization from agriculture or any part of the university. They wanted it to stand-out by itself on its own feet, and they wanted a dean and a faculty of the school or college of veterinary medicine of its own. Veterinary medicine here in California had grown out of agriculture. We had developed over the years a center of veterinary research here that had attracted national and international attention and some of us believed, just as we did in forestry, that these things should be related to and kept so with agriculture. And the College of Agriculture, in my time, was the organization in the University that we thought of in respect to all of these things. We got around that in California without difficulty because our people in veterinary medicine were with us and didn't subscribe to that philosophy. But even if they had subscribed to it, all I had to do was to say when Dean Hart or anybody else came in to talk to me, "I'm



not speaking to you as dean of the College of Agriculture. I'm speaking to you as vice-president of the University." And they harmonized with us.

*Well, then sometimes it's necessary to rearrange that administrative chart to fit the prestige demands of an outside organization and it has nothing to do with the administration of the University.*

That's right, and you might end up with something that isn't quite logical from the standpoint of the chart, you see, but what does it matter if you satisfy these criteria and get the job done as you want it done?

Before I forget it, let me tell you of another thing where I had an opportunity again in tying these things together. I think I can, without too great immodesty, claim to have been as much responsible as any other one for getting a division of veterinary medicine established in the Land Grant College of State Universities, and when we reorganized that association a number of years ago I proposed to the executive committee that they set up a division of veterinary medicine in that association. In order to recognize the veterinary schools as parts of the land grant colleges and universities, as all of them were but one, they had a little organization of their own, and they'd go off and have a little meeting, just veterinary people, primarily the deans--we established a division of veterinary science in the Association of Land Grant Colleges and Universities. I was a member of the executive committee of the association at the time and had an opportunity there to do something nationally to bring veterinary medicine into our fold and help strengthen its relations with animal, poultry, and dairy husbandry. I believe in that philosophy very strongly.

*Before we terminate this conversation, is there anything that you can think of that has anything at all to do with the School of Veterinary Medicine at Davis? Or any of the personalities?*

There was one problem that I encountered--not only in veterinary medicine, but also in forestry. Forestry grew up in the College of Agriculture. It started with one man, Walter Mumford, whom one of my predecessors, Dean Hunt, brought from Cornell to establish a Division of Forestry in the Department of Agriculture in the University. Veterinary science grew up as a research division in the Experiment Station, I made departments out of both of those divisions, ultimately, before I got through, and ultimately we made schools out of both. So their evolution was in agriculture.



My title first was Dean of the College of Agriculture. Some of the foresters--not here, but elsewhere--and some of the veterinary scientists--not here, but in other institutions--didn't like the idea of having to report to "a dean" of agriculture. I always assumed they didn't like their dean of agriculture very much. It was a problem in the organization. There was an American Society of Foresters, and the veterinary people had an organization of Deans of Veterinary Schools. They were jealous of that, they wanted to report directly to the president.

Mr. Sproul solved that problem for me, very nicely, because he ultimately made me Vice President of the University. So I wore two hats! When I dealt with the Dean of the School of Forestry or the Dean of Veterinary Medicine, I'd just put on the hat of Vice President of the University even if it didn't have anything to do with it [laughs].



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## Donald E. Jasper

### Interviewer's Notes:

These interviews were conducted by A.I. Dickman in 1974.

### Curriculum Vitae:

1918 -

Dean, School of Veterinary Medicine, UCD; 1954 -1962

Professor/Assistant Professor, School of Veterinary Medicine,  
UCD; 1947 - currently.



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## Donald E. Jasper

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### Childhood and Youth

#### Origins

*Dr. Jasper, let's start with the beginnings.*

Well Dick, I guess the beginnings are with my grandparents whom I knew, and my great grandparents whom I did not know. My paternal great grandparents, Merrill Jasper and Nancy Jane (his wife) came across the Plains in covered wagons in 1857. They came on the Oregon Trail and settled first in the region near Corvallis, Oregon, in the Willamette Valley. My grandfather, William Robert, was born there and eleven years later the family moved to northeastern Oregon to the Grande Ronde Valley near the town of La Grande where my father (and later I) was born.

My father had an older brother, Frank Merrill Jasper, and my father's name was Edward Doak Jasper. I have never known the significance of Doak and became curious about it too late to find out from the old-timers. My grandparents, told me as a small boy that we were from the same family as Sgt. William Jasper who was a famous scout with Merrill's Marauders in the Revolutionary War. Looking back I can speculate that possibly this accounts for the frequent appearance of the name Merrill in the genealogy. It was my great grandfather's name and there are other Merrills along the way.

Merrill's Marauders Sergeant Jasper operated very successfully against the British doing what we would today call guerrilla warfare: sabotage, rescuing prisoners and all that sort of thing. They operated in North Carolina, South Carolina, Tennessee and Georgia. There are a number of towns and counties named Jasper, in honor of William



Jasper; and there are a number of statues of him scattered around that part of the country (William himself was killed while raising a flag that had been shot down. He had done this before successfully and it was part of his claim to fame.)

A few years ago when we were in Washington, D.C. my wife studied these genealogies in the Library of Congress and followed that particular Jasper family through southern states, through Tennessee, some to Missouri. My great grandfather left from Independence, Missouri, to come to Oregon, but then so did everyone else who was coming across on the Oregon Trail. So I do not know exactly where they came from and we lack a couple of generations in putting these genealogies together.

We did notice that a Presbyterian minister, William Doak, started Tusculum College in Tennessee. This college is still operating and possibly there is some connection between the families back in Tennessee that gave rise to my father's middle name. But that is pure speculation.

My paternal grandmother was Clara Kendall whose family also crossed the plains and settled near Walla Walla, Washington. My maternal great grandparents came from Scotland to Canada. Most of their six children came to the States as young adults. Some were farmers and some became missionaries.

My grandfather, Ewen Hugh MacDonald, married a Scottish lassie by the name of Mary Miller. My grandfather's brothers and sisters were a long-lived bunch and at one time there were five of them still living who were ninety-five and over and quite healthy. Several exceeded one hundred years of age; my grandfather died at ninety-nine and nine months.

My mother, Margaret Florence MacDonald, was the second in a family of four girls and two boys. She was born in Hamilton, North Dakota. The family later moved to Storm Lake, Iowa, and then when my mother was a teenager, to Nyssa, Oregon. She took up teaching as a career. She attended Oregon Normal School in Monmouth, Oregon, and part of her normal school training was during summers between teaching sessions. She had a school in Island City, Oregon, which is about two miles from La Grande, where she and my father met.

One of the interesting requirements for the teachers of that time was that they also had to teach Sunday school, which was quite all right with my mother. She wanted to do that anyway--but times were different then.

None of my grandparents had a full college education, although Grandfather Jasper attended agricultural classes at Oregon State College in the 1880s. But on both sides they were very widely read and in many ways I think they were much better



self-educated than many of our college graduates today. We see college graduates now who can hardly read; we see them unable to write good paragraphs; and we see them very ignorant of history, literature, economics, fundamental mathematics, and so on.

My Grandfather MacDonald was a very solid Scottish Presbyterian who had been very active in the church throughout his life. He was able to quote very long bible passages from memory and sing many hymns in a great rich bass voice. This is something I remember fondly from my boyhood.

My Grandfather Jasper was not particularly interested in church, but he was interested in politics. My sister has framed on her wall an old handbill which is now quite a treasure, advertising a debate between my Grandfather Jasper and the then governor of Oregon, Walter M. Pierce. At least in the debates, so to speak, he more or less got into the big time. (He came by his political interests naturally; his father, my great grandfather, Merrill Jasper, was the first state senator from Union County.) Politics were pretty much Walter's major outside interest. He never drove a car (never learned how to drive). I remember one time when I was fairly small, we had a car with a glass window which was rare in those days, and my grandfather tried to spit his tobacco juice out that window, but it didn't work (laughter) because the window was closed.

But Grandfather Jasper never learned to drive and every Saturday we'd hook up a pair of grey mares to a hack (which was essentially the pickup of those days-- something between a wagon and a buggy) and we'd go to town. He'd do a little bit of shopping and a lot of standing around on the street corner talking politics.

Another thing I remember, we used to go to Grandfather Jasper's for Sunday dinners quite frequently and he'd give each of the children (I had three sisters) a dime. On the way-home we'd stop and spend a nickel for an ice cream cone or a candy bar or a box of Cracker Jacks, and a nickel went into the piggy bank. That went on for a long time.

I rather marvel at both my father and my Uncle Frank who graduated from college even though they were way over in northeastern Oregon. I'm sure that there were very few from that region who ever went to college. There was little money in the family, but my father graduated with honors in economics from the University of Oregon. He was given a fellowship of some kind to the Columbia Law School and really intended to take it, but he had to make some money to pay the rest of his college expenses and he got-so deeply involved in farming that he couldn't get out. So he ended up being a farmer.



My Uncle Frank graduated at a somewhat older age (he must have been 30 or more) from Willamette University. He became a Methodist minister. My Uncle Frank's children (two girls and one boy) were all quite intellectual, and my Cousin Herbert became one of the world's leaders in the field of neurophysiology. Three or four years ago there was an international symposium in his honor. He was at the Montreal Neurological Institute and he and Wilder Penfield worked together very closely and frequently published together.

*Were you close to him when you were a youngster?*

Herbert was thirteen years older than I. I remember meeting him when I was a freshman in high school and he, of course, had finished college by then and was in graduate training. But I got acquainted with him later and we've really become quite close friends. He's a very delightful person and we've had a few really good visits together though we haven't seen each other a great deal.

*When were you born?*

I was born December 30, 1918.

*How many brothers and sisters do you have?*

I have three sisters, Edna (Margaret Edna), who is three years younger, Rhoda Jean (we call her Jean), who is four and a half years younger, and Mary Alice who is about eight years younger. We see each other fairly often.

*So you were the big brother!*

I was the big brother, right. Sometimes a little ornery they tell me, but then it was three against one (laughter). We had a very good time as a family! In those days we started out working quite young and the first chore that I can really remember was keeping the woodbox full and that's quite a job. As I got a little older I actually learned to use an ax pretty well. I didn't chop off any fingers or thumbs, but I came close.

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Donald E. Jasper



*You were born on the farm?*

I was born in a hospital, but I was raised on a farm, right. It was nine-miles from La Grande which was a major town, and it was about six miles from Island City, which was a little village. It did have a store, a gas station, a four room school and a few people; a flour mill and a few things like that.

### **Early Experiences**

*Is that where you went to school?*

Some. When I was quite young we had six miles of gravel road and three miles of dirt road. In the wintertime, the dirt road frequently became impassable.

A country school opened a mile or so away (called Valeria) when I was in the second grade and they hired a teacher who was probably eighteen or twenty years of age, and really kind of a dumbbell. She was hoping to get married and spent most of her time knitting. She had a little trick; she'd have the older students give the recitations to the younger kids while she knitted or fooled around. I remember that as a second--grader, I was asked to teach a first grade kid (there weren't many of us, about one in each grade and maybe about six or seven in the whole school), so I had this poor little first grade kid for her reading. I can remember if I didn't know what a word was I would just make something up (laughter).

I obviously hadn't learned much in the second grade so I was sent to live with my grandparents and went to a four room country school. I remember that I was, embarrassed that I had to repeat second grade arithmetic--even though for good reason.

*This was in Island City?*

This was in Island City. And I know I had pretty good, instruction there, and by the time I was through with the third grade I had fairly well caught up.

This, I thought, was really quite a large school. It looks fairly small now but it had four rooms. All the plumbing was outside, the outhouses were in the back and a well in the front where we got our water to drink.



One thing I remember during these years was that I really emulated my grandfather. He had broken his hip and he walked with a limp like Chester. So I also walked with a limp. My grandfather's name was Bill Jasper so I let everyone know my name was Jasper Bill. The people I knew in those days would call me Jasper Bill years later, although I dropped that long ago.

*Did you have any other nicknames?*

No, I didn't. That was the only one and it was fairly temporary (for two or three years).

There is one other incident that I've never forgotten. There was a boy named Eugene Schaefer who was a little larger and a little clumsier and a little duller than some of the rest of us. One day we were sitting around on some of the stumps in the schoolyard eating our lunch from a lunch box or lunch pail. Another boy, Kenneth Roberts, and I took Eugene's lunch pail and put it behind the stump that he was sitting on, so he couldn't find it. After school, Kenneth and I were walking home and about three-quarters of a mile down the road was the Schaefer place. And Schaefer's mother was waiting for us. Schaefer's mother was six feet tall and weighed 200 pounds (so it seemed to a couple of little boys) and she said, "Which one of you boys is Don Jasper?" Well, I owned up to it. She had a great big long switch (it seemed like it was about twenty feet long, but it probably was only ten) and she said, "We're going back and get that lunch pail." So she marched me back, through the town of Island City where everybody could see me, and just as the big kids were getting out of school. That was an embarrassing experience--back to the stump to get the lunch pail.

Well, that made an impression on me--something about being responsible for your actions, and it was probably one of the better things that happened to me. I regard it as a good and healthy experience.

Between the fourth and the eighth grade I went back to Valeria School. They had another teacher by then. She was married to a neighbor farmer and her name was Zilpha Howell--an uncommon name. She had anywhere from three to eleven pupils during those five years.

*In the entire school?*

Yes. Mostly one to a grade, but obviously when there were eleven students, she may have had two or three grades with two or three kids in them. But personally, I never had a classmate. I was always in a grade by myself.



And then my sister, Edna, went there and for my last years I had two sisters in the school. It was a good time. Most of us rode horses (occasionally we'd walk the mile and a half). At first, there were three of us on one horse. And, of course, I (as the big brother) had to handle the horse. So I'd get to sit in front and my older sister behind me and then the next sister would get the rumble seat. The horse didn't like to have a rumble seat passenger and when she'd get on he'd always switch his tail and hump around a few times and buck a little bit, then he'd settle down. For some reason my second sister never was too fond of horseback riding (laughter).

Then we got another horse, and we never had more than two on a horse after that. But the other kids all rode horses too, and we'd turn the 'em loose in the schoolyard where they'd graze while we were in school. During noon hour sometimes we'd have rodeos and we'd whip the horses and kick them and put burrs under the saddle to make them buck until it got too boisterous and then we had to stop that.

One of the boys drove a buggy occasionally and sometimes we'd all pile in the buggy and go for a ride. One time in the buggy when it was full of kids and badly crowded, I fell out and the back wheel ran right across my face. I think it broke my nose. I didn't go to a doctor, but it bled badly and it was crooked thereafter for quite a long time. It's still a little bit lopsided.

I must say that Mrs. Howell was a very good teacher. One advantage of the old country school was that you got the same lesson a good many-times because you could hear the older kids and the younger kids reciting so there was a kind of constant review, so to speak, and maybe that was good. I don't know, but I seemed to learn fairly well.

We had to take state exams when we graduated from grade school in those days, and I think that was very good too, because it let everybody know where they stood. I was fortunate enough to rank pretty high in our county exams. So, Mrs. Howell apparently did all right by me. [It may be fitting to note that Mrs. Howell has not forgotten me although I have not seen her for about forty years. It turns out that it was she who nominated me for the Alumni Achievement Award. I am going to Oregon to receive the award from Eastern Oregon State College and I will certainly be sure to look her up, thank her and reminisce a bit.]

I also learned some things about life and death. Mrs. Howell had a very beautiful and charming little daughter who was about three or four years of age. This daughter was really her whole life. She was very wrapped up in her daughter. When I was in the sixth grade the little girl developed appendicitis and peritonitis and hovered between life and death for a couple of weeks or so. It was a very trying time for Mrs. Howell, and then the little daughter died. That was a terrible blow. I was a pall bearer at the funeral.



So I learned something about life and death then as I saw the great burden of the loss on this Lady over the next couple of years. Then, I think I was in the eighth grade, her husband was sharpening a plow share. and he cut his arm very badly. He went to the doctor and while in the doctor's office he collapsed and died. So I was a pall bearer again. That's something a small boy remembers.

By then I was a regular farmhand. I was taking the place of a man on the farm.

*What did you produce on the farm? Did you have any stock?*

We had horses (we farmed at first entirely with horses) and I remember when my father got his first tractor. We had a few cows, and from time to time we had pigs. Sometimes we fed maybe a hundred or so and sometimes we had a few sows. Maybe we had up to half a dozen cows, but mostly it was grain and hay. Later on we started raising some grass seed and sometimes we'd raise potatoes or various kinds of dry land crops. There was no irrigation at that time.

*How many acres?*

My father farmed about 600 acres. It was not the best soil in the world, unfortunately, and it was pretty hard going. My father would have been a good lawyer or he could have been an agronomist. He would have been very good at that. He was always trying new things and new ideas. He was a forerunner in bringing many farming innovations to the county, but since he didn't have the best soil on which to work, he never prospered as well as some.

*Were you and your father close?*

In a sense we were. Not in the sense of being a confidante and pal and that sort of thing, but I always had a tremendous respect for him and I think he was generally fairly proud of his son.



*Is he still living?*

No, my father got pneumonia in 1935 when I was a senior in high school (age sixteen). That's about the year sulfonamides were invented but they were not in use then in Oregon and he died. He left my mother with four small children and a farm that was heavily mortgaged in the middle of the depression.

*What did she do?*

Well, she taught school, and rented the farm out. We got along. She moved into town then.

*To La Grande.*

Yes. We were very happy as a matter of fact. But I know the responsibility weighed very heavily on her shoulders for a while. She played the piano and sang that is one of my memories-- especially if I was sick.

*Did you inherit any of her musical abilities?*

Just a limited amount. My sisters did better. All three of them are musical. Two of them are married to farmers. One is on the home place and one is in a neighboring county. My younger sister is a professional musician. She's a homemaker too, but she teaches organ, piano and cello. In fact, her cello has taken her to Europe about five times and twice to Alaska, so she's got a lot out of it. Her husband is a musician. He's in the Salem school district where he's band leader.

Music has been a part of our life. I learned to play the piano some, but always somewhat mechanically. Later on I learned to play the trombone (in high school and college bands). I enjoyed that, but I'm not a musician. I just don't have the ear for it. My wife and my children are very musical. I can enjoy it, but I'm not much on performance.

*Did you have any special scholastic interests that developed?*



No, I really didn't. I did get an idea of veterinary medicine when I was a senior in high school, but it didn't flourish at that time.

As a youngster in grade school I didn't really have any particular ambition to go to high school, although I thought perhaps I would. But, during high school (until perhaps my senior year) I had no idea at all that I would ever go to college. I supposed that I would probably be a farmer or get a job doing something. I didn't really have much of a concept of the future at all.

During high school in winter I was boarded out to a family that I didn't know, because of the impassable roads. Then, the spring I was fourteen, I got a driver's permit, so I drove an old 1928 Chevrolet truck back and forth to school.

The next two winters my parents moved to town during those three or four winter months so we could be together. In my senior year my father became ill late in November and died in early December. My sister stayed with one family and I stayed with another the winter of my senior year. My two younger sisters stayed with my mother on the farm that winter and the following year before school started my mother moved to town.

I was a real country boy, I tell you, when I started high school. Ironically enough, the high school burned down the day before I was to start and we had our classes in churches around town.

*How big is La Grande?*

Well, in those days it was about 7,000.

*Did you, have any jobs when you were going to school in La Grande?*

Well, living on the farm I had the farming chores, but when I was boarding in town I didn't have any jobs.

*Did most of the country kids go to high school?*

I was thinking about that last night. Of the kids I knew in the country school and the kids that I knew when I was in Island City, I can only think of one who graduated from high school.



*You never debated about going to high school?*

My parents never had any doubt in their mind, and I didn't think too much about it that I can remember. But I do know that I didn't expect to go to college. In My sophomore year my world began to expand a little bit. Well, I guess it began in the spring of my freshman year because I joined a beginner's band to play the trombone. That got me into a new and different element and in my sophomore year I started making some very worthwhile friends. I got into the regular band and I started living in town part of the year. We started going to the Presbyterian church and I made some fine friends from that association that have lasted all my life. It helped a great deal--got me into the right circles in high school.

By my junior year I was really participating. I played the lead in the junior play and I was in the band and I was doing various other things. My senior year I was vice president of the class and was in more plays and operettas.

*Had you started to date yet?*

(Laughter) Well, I was basically rather shy and I really felt myself kind of an ugly duckling, I guess, when I started high school. I admired one girl from the old Island City days. She was a year behind me, but I really never got nerve enough to approach her (it was always admiration from a distance).

I guess the second year I did get a girlfriend and I kept her for two or three weeks until it was obvious that she wanted me to carry her books every night. That was too much. So I gave that up and was friendly to all the girls and I enjoyed that better than being tied to one.

When I was a sophomore I went to the principal's office to get something signed and there was an older girl, in fact I think she had just graduated the year before. She was a nice looking girl and she signed whatever it was and then she said, "You know, Don, you're really quite a nice looking boy." I had never regarded myself as anything but considerably less than average in appearance and that perked me up (laughter). It didn't make me vain or anything, but it made me realize that girls might at least find my looks acceptable. Later I learned that she was my second cousin.



*Did you ever play for dances?*

No, I was never that good a musician.

*Did you go to dances?*

Oh yes. I started about my sophomore year, out at the old Grange Hall. It wasn't a very big building, but they danced square dances and schottisches, waltzes, two-steps, and things of that nature. Age and size didn't make any difference, you know. You'd be dancing with the farm wives, the skinny ones and the big fat ones, and the little girls. It was really a lot of fun. We had the fiddle player and the square dance caller and so on. So that's more or less where I learned to dance. Then, later on, I went to school dances and enjoyed myself.

*Did you go to church each Sunday from the time you were small?*

When I was on the farm, my earliest memory is of going to the Methodist church in Island City. Then the American Sunday School Union started a Sunday school in another schoolhouse about four miles away. We attended it in good weather. It was a very good Sunday school and a very good influence.

[When I was boarding in town as a freshman and really quite alone, without many friends, I attended church even in midweek. At that time I definitely became a Christian and there was a real commitment in my life that was not there before. Although I was brought up as a nominal Christian, I had not made a personal commitment.]

When we moved into town, we attended the Presbyterian church as a family and I became active in the young people's work, which we called Christian Endeavor. Later I taught younger kids in Sunday school. At the time of my father's death, he was an elder in the church and I was elected an elder after his death, first, to fill his term. I've been an active Christian since that time. I was an elder in the Presbyterian church at Ames, Iowa, when I was in graduate school and again in St. Paul, Minnesota, when I was in graduate school--a very fine Presbyterian church there, which was in a real period of Christian growth.

[When we came to Davis my wife Elizabeth and I soon found we could not get the spiritual nourishment we needed from the Davis Community Church so we started



attending a small Baptist church organized only a few weeks earlier and meeting temporarily in a schoolhouse. The First Baptist Church is now a major spiritual influence in Davis and we are glad we could have a part in its ministry these many years.

Important as my work is, my relationship to God and to Jesus Christ my Savior is even more important. It is here that I really find rest, peace, joy and security. As the old song goes "This world is not my home, I'm just a passing through." It's not that I don't take my present responsibilities seriously. I am most serious about them because I believe they are part of my purpose in life, part of the responsibility God has given to me. But I also realize that all earthly things are temporal, whether they be pleasant or unpleasant, and that the only really important things are eternal. Therefore the things of this life are not an end in and of themselves. They are only forerunners to an eternal destiny which each passing hour brings nearer and nearer.--D. Jasper.]

## Undergraduate Years and Influences

*What was the influence then that decided, you would go to college?*

There were several things. As a boy I worked very hard on the farm. I started in at the age of nine or ten doing certain kinds of farm work. By eleven I was working for other farmers for 25 cents or 50 cents a day, and really working very hard, ten hour days. By the age of thirteen I was doing a man's work and keeping up with the men on all kinds of farm work: horses, driving the horses (four and six horse teams sometimes) working, the summer fallow, all kinds of haying chores. I did the whole gamut during those years: driving the caterpillar tractor, running combine, punching header, driving truck, hauling sack grain.

They were depression years and I observed that it was very tough going for my parents. I never expected any kind of pay for any of this work.. It never crossed my mind that there would be any kind of pay. I remember at the end of the summer when I was thirteen and I had worked very hard, a carnival came to town in La Grande and my father gave me 75 cents to spend at the carnival. I thought that that was unbelievably generous.

Well, when I graduated from high school in 1936, things weren't any easier, so farming and farm work was not particularly appealing. With my father dead, I was too young to take over the farm myself. We lived in town and there was a small junior college and teachers' college in the town and it didn't cost very much to go to



school. As a matter of fact, I could get a job for 25 cents an hour on the NYA (National Youth Authority) for mowing grass, shoveling snow, shoveling coal into the furnace, sweeping floors, washing windows and things of that nature.

My folks, I'm sure, always wanted me to go to college, and, in fact, my mother said later that they intended to pay me for my work by seeing that I went to college. So that was in their minds. And I could even get jobs by going to college.

So I went to this junior college for two years. Instead of teacher training, I took junior college work and I did reasonably well (better than a B average). I participated in music there. Politics a little bit (I was vice president). Of course, in a school of 350 that wasn't very big politics (laughter).

*What was the name of the school?*

Well, back then it was Eastern Oregon College of Education. Now it's Eastern Oregon State College and is quite a bit bigger, and is a four year school.

By the time I was half way through there, I was planning bigger things. A close friend asked me one day if I'd ever thought of being a veterinarian. As a matter of fact, I had thought of it when I was about a junior in high school and, in fact, had asked the county agent about it. But he fairly discouraged me (horses were going out and there was no future in it). So I had given it up. But when my best friend brought it up again a couple of years later it aroused my interest and since I then had a partner in crime, we made some more inquiries and got both encouragement and a fair amount of discouragement which spurred us on.

*Was there a veterinarian in practice in La Grande?*

Yes, there was. He was a real old-timer and his life style should have discouraged us because it was not too much to look forward to. He was an old man and he was from the old school even then. It should have discouraged us but it didn't.

*Was he a college graduate?*

Oh, he'd had a year or so, I suppose. He probably graduated from a private school back about 1880 or something of that nature. He had done a lot of good, but he was living in a different age by then.



I liked math and physics fairly well and I liked the math and physics teacher in the junior college. I had given some thought to going into physics really, and that would have turned out quite well because I probably would have gotten in on the beginning of the nuclear age, so to speak. I'm not sure that I had the brains to be a nuclear physicist, but it would have been an opportunity to be a forerunner in nuclear physics or something like that.

Others encouraged me to be a physician, particularly when they heard I was going to be a veterinarian. One of the physicians in town told me that was the way I should go. I guess there were two reasons that I didn't go to medical school. One of them was just stubbornness, but another one was the thought that I wasn't good enough. I still had a bit of an inferiority complex. I didn't realize that some of these things were in reach if I really went after them. I thought that was out of my capability financially and I probably wouldn't get into medical school anyway.

Another possibility was ministry. I already mentioned that I was a Christian and a committed Christian (and I still am). I thought seriously about going into the ministry, but unfortunately the ministers that I knew at that time didn't appeal to me. We did not have a very good minister in the Presbyterian church. We had a good young people's group but they were self-generating and self-motivated. The minister, frankly, was more of a drag than he was a help. I saw him catering to some fussy old ladies, giving some namby-pamby sermons, and it kind of turned me off to the ministry as a career. But, that's another area where I think I could have been very successful and could have contributed.

The upshot, anyway, was that I went to veterinary school and that has turned out very well. I still believe and I often advise the young people whom I frequently see that there are lots of different roads to success and a very satisfactory life. If one door closes, there are other doors that are opened which maybe turn out to be better than the one that closes. I firmly believe that.

## **Veterinary Medical School, Washington State**

*Where did you go to veterinary school?*

I went to Washington State in Pullman. My friend and I went up in the spring of the year and visited the dean.



*What was your friend's name?*

Jack Eakin. We had a good visit with the dean. He didn't tell us whether we would get in or not.. The dean at that time was the admissions committee. We drove up in an old 1924 Chevrolet coupe (took us most of the day to get there).

*How far away was it?*

It was a little over 200 miles. We took some blankets and a canvas along and drove up on the west hills opposite the campus that night. We rolled out under a tree in somebody's front yard and got up again around daylight and went to see the dean. We had a good visit and drove home again: In August we got word that we had both been accepted, so we went to Washington State that fall.

I "bached" all the way through veterinary school. I didn't join a fraternity. Eakin joined one, but he only lived in it for about half a year and then he was back baching again.

*Did you live in a dorm or apartments?*

We found apartments in town. I lived two and a half years in a basement room which opened to a hallway that had laundry trays in it and a small table with a hot plate on it, and a toilet (very small). There were two more boys who lived across the hall, and they bached, and we shared our hot plate. We had a pantry where we could put things. We really didn't have a refrigerator. For a while we even took in boarders until the landlady figured out we were running her electric bill too high and made us stop.

We lived very meagerly, but we enjoyed it thoroughly. I kept track of my dating expenses for the first two years I was in veterinary school and it was something like 25 cents a date.

Pullman was a long way from anyplace. It was seventy-five or eighty miles from Spokane and the roads were not very good. The train ran every day but it was a real effort to get to Spokane which was the only close city of any size. Moscow with the University of Idaho was nine miles away, but it was hard to get to.



So Pullman was a residential college and students didn't go home on weekends; they stayed there. There were a lot of dormitories, and fraternities and sororities. The dormitories had open houses which meant that the music was there, the girls were there. All the boys had to do was attend. You didn't come with a date. You danced with anybody you wanted to. And if you wanted to take somebody out for a coke afterwards, why, you could do that. It was a great way to get acquainted and you could have a lot of fun without much money, and it was good for both the girls and the boys.

The sororities and fraternities held dances that you could be invited to, and sometimes the sororities would also have open house where you could go to one sorority for a while and then to another one. That again was a good way to get acquainted. Then at times you could be invited to their special affairs. I got my share of invitations.

The various departmental groups (like the pharmacy students, agricultural students, home economics students, veterinary students, engineering students, chemistry students, and the miners) would all have an annual ball. You could buy tickets and go. For these balls and for most of the sorority and fraternity affairs, we dressed up the best we could. The boys wore suits, the girls wore their nicest long dresses. We usually spent a little something and bought a corsage for the girl. (I suppose that cost about 15 cents or 25 cents.) The girls had their dance programs, very beautifully done, and it was really very nice. I've never seen anything like that around this campus--not nearly as nice a social program.

*Really a lot of student spirit.*

There was a great amount of spirit. Nobody could go anyplace else. So school was our center of activity. Those were very good years.

*How about the courses--were they well taught?*

Looking back at some of the notes I still have, I'm amazed at how good some of them were. On the other hand, I'm appalled at the general conditions of the school.

*The lab facilities and things like that?*



The lab facilities, the availability of instructors . . . We had about forty-two in a class which was a good sized class in those days and most of the instruction was in the veterinary school. We did take one or two chemistry courses and one or two animal science courses outside of the school, but most of our instruction was in the veterinary school.

*Microbiology, physiology?*

That was all in the veterinary school. For our entire four classes, and for four years of work, we had a faculty of only six or seven people, including the dean. As far as support was concerned, the dean had a secretary and the clinic had a part-time secretary. There was not a technician in the whole school. There was not even an animal caretaker. If the faculty used the lab, they washed their own dishes, cleaned up their own things, made all their own preparations for class themselves.

*Did you have any lab animals?*

Yes, we had some.

*You had to take care of them yourself?*

Oh yes. There were one or two exceptions: there were a few student employees. This pharmacology-physiology professor had some student employees. The pathology professor had one student employee. The microbiology professor had a student employee to help prepare some things for class and maybe help with a little bit of research that he did. The microbiology professor was the only one who did any research and what he did with his limited opportunity was pretty good. He made contributions in a number of areas. He was the principal one with interest and ability in research with the exception I guess of pathology. We did have a pathology instructor with research interest.

They all had a tremendous teaching load. Our dean taught a good deal of the surgery. Dr. McCoy was in charge of the clinic and he taught at least 75 per cent of the classes in both the third and fourth year. He was in charge of all of the small animal work, all of the large animal work, all of the ambulatory (on the farm) work, all of the hospital work, all of the country work. But he usually had one man to help him, maybe teach a class or two, maybe go out to the country with the boys, maybe see a dog in the clinic or do a little bit of the clinic work.



But this person never stayed more than a year or two. He'd be gone and Dr. Mc Coy would have a new one to help him. Dr. Mc Coy usually took the summer to go to Alaska and do a little gold mining. He was an old sourdough, and had spent some years up there. (Dr. Mc Coy had graduated from Kansas.)

But of all the college professors I have had, he stands out as one of the more remarkable. Among the old-time practitioners of the pre-sulfonamide, pre-antibiotic days, I am certain that there were very few to equal him in general knowledge or in skill and inherent intuitive ability--he used to amaze us. He was a little Irishman, bald-headed, and he wore glasses. His eyes were a little bit small and he had kind of a long face. He'd look through those glasses at an animal in a truck or he'd see it from a distance and tell us immediately, "Looks like here comes a case of such and such." He'd walk around it, maybe he'd examine it and then he'd tell us all about it. He was extremely astute in physical diagnosis, and having made the physical examination, he was very good in treatment. Now they have a building named after him there. If anybody was a legend in veterinary school up there, it was Dr. Mc Coy. Some of the others are legends, too, but in different ways.

Comparing the effort that is made to teach the students today with the effort that was possible then, and the fact that in Davis we have over a hundred on our faculty and all kinds of secretaries and technicians and so on, it's amazing what they accomplished. There are some really prominent graduates of that school of about that era. We have several on our faculty here and others have made brilliant careers elsewhere.

*When you graduated, did you think about becoming a practicing veterinarian or did you want to go into graduate work immediately?*

Little elements of chance of one kind or another are extremely important in anyone's destiny. I expected to practice, but when I graduated I took a job with the state Department of Agriculture (or I had said that I would) in brucellosis and tuberculosis control along with a good many other classmates.

Actually World War II had just broken out. The class before us was mostly in the advanced ROTC. Most of them went directly into the army, but that program had stopped for our class and we couldn't get into it. So most of us volunteered for the veterinary corps, but at that moment they didn't need anybody in the veterinary corps. They had all these ROTC people who had come through ahead of us. We were subject to being drafted as regular soldiers of one kind or another and we didn't know what would happen to us.



I accepted the job with the state, but while I was taking the state board examinations, the dean came up and wondered if I would work in the clinic that summer. Well, that sounded like a better experience than t.b. and brucellosis control so I accepted that job.

The reason I was going to work in the clinic is that Dr. Mc Coy was going gold mining, and Dr. Schneider, who had been his assistant that year, had quit so the entire clinic responsibility--large animals, small animals, treating animals on the farms--was on my shoulders.

*What was the dean's name?*

His name was Wegner, Dean Wegner. He was dean there for three or four years.

*Was there a practicing veterinarian in Pullman?.*

No.

*So you had it all.*

Yes. Dr. Cordy, now of our pathology staff, was the pathologist and he was there to do the autopsies and that sort of thing. But after two or three weeks he was called into the army. He had a reserve commission and he'd been an ROTC man. So he went into the veterinary corps and served his time in Indochina which left me with pathology, too. I had one senior student to help me and one coming junior student, also. The junior student had been working for Dr. Cordy and had a background in bacteriology and laboratory work. He was a big help as far as the pathology and diagnosis were concerned.

### **Courtship and Marriage**

The summer of '42 was an extremely busy summer. On the 11th of July I decided to go to a party that was being held for summer school students at the golf club and I met a young lady who was a graduate student in English who had been asked to chaperon the affair--whatever that meant--and we took a liking to each other.



I asked to take her home and she accepted. She asked me to go on a picnic with her the following day and then we learned that we had both been invited out to the same dinner party on the following Monday evening. The reason for that was that she had a girlfriend who was dating a veterinary student friend of mine and they'd gotten their heads together and decided that this young man and this young lady ought to meet each other and had arranged the dinner for our meeting, but we jumped the gun and met on our own, so to speak. Her name was Elizabeth Miller (from Kansas).

We had quite a few dates that summer, most of which turned out that we went to see a sick cow on somebody's farm or to deliver a calf or whatever. She stood up to that kind of treatment pretty well and by the end of the summer she was wearing a ring. And we were married the following May 23rd.

We met in Denver and were married in a little Presbyterian church there. Elizabeth arrived a couple of days early and made arrangements with the minister for us to be married after church (young people getting married in strange towns was not uncommon during the war years). We had an appointment to see the minister on Saturday night, but he wasn't there (I've forgotten why), so we showed up at church and sat through the church service. Then the minister announced, "There's supposed to be a young couple here to be married, and if they will come forward the congregation is invited to stay."

While they were singing "Just as I am," we marched up to be married (laughter). After the marriage ceremony and while we were waiting across the street from the church for a taxi to take us downtown to go to dinner, an old gentleman from the church walked over and shook my hand and he said, "Don't worry young fella, don't worry. It's not so bad. I've been through it three times myself (laughter)." So that launched us into a very happy marriage.

#### *Why were you married in Denver?*

Well, her folks were in the process of moving to Denver from Pullman. They'd moved out to Pullman to be with her in graduate school. They were a little foot-loose and fancy-free at the time. Her father had been a farmer but his eyesight had pretty much failed. He was really not able to work anymore.

Another sister and her husband had moved to Denver so the family moved back to Denver. They had just arrived and so we were married there. It wasn't too far for me to come.



## Graduate Work: University of Iowa and University of Minnesota

In the meantime I had often the idea that maybe it wouldn't be too bad to keep on working for colleges. I had spoken to the dean about a job in Pullman and he said, "Well, if you're going to do this, you're going to need more education." He was absolutely right. He knew Dr. Fowler at Iowa State College and said to me, "Why don't I see if he would like to have someone come work with him in surgery?"

That suited me, so Dr. Fowler invited me to work at \$100 per month. I worked for him in surgery for two years and got a master's degree along the way, with part-time graduate study and part-time working in the clinic.

*Did you write a master's thesis?*

I wrote a master's thesis on the effects of sulfonamides in the horses. But I realized that if I was going to do academic work, I needed more training. So I went to the University of Minnesota for my Ph.D. training. I was still expecting to be a clinician, but my training there was more basic work. I took a fair bit of physiology, more pathology than anything else, still expecting to come back and really be a surgeon and clinician. I worked in experimental surgery in the medical school, too. I took some surgery, radiology and clinical work.

*What was the subject of your dissertation?*

My dissertation was on liver function in dairy cattle during pregnancy and parturition. It was really related to a metabolic disease we call ketosis, associated with low blood sugars and burning of body fats and development of very fatty liver, and, things of that nature. So I was evaluating the liver function as it became fatty.

*What was the amount of the fellowship that you received?*

At the University of Minnesota I received \$2,400 per year. That doubled my salary from Iowa. I had actually received a fellowship of research assignment at Mayo's which I



probably would have taken. It would have been in experimental surgery and it would have been with Bollman and Mann who were very famous research physiologists and surgeons at the Mayo Clinic. However it only paid \$100 per month and by then we were expecting our first born and I just couldn't live on \$100 a month. So I went where I could get \$2,400.

*Your first born was Donald R.?*

Donald Richard, yes.

*What was his date of birth?*

He was born on November 9, 1944, in the university hospital.

*And Jean E.?*

She was born ten years later on November 30 in Woodland Clinic. After our son was born we found \$2,400 was a little bit skinny, too, so my wife taught English for two or more years (English, rhetoric and speech at the University of Minnesota).

*You stayed there how many years?*

Three years.

*Did you have a number of job opportunities at the time of your degree?*

Yes, I had three. I had some feelers from Pullman that I didn't follow up. I had an invitation to go to the University of Illinois and tentatively I accepted, or indicated that I would probably go there.

### **The Decision to Come to Davis**

Then Dean Haring wrote to me and asked if I wouldn't like to come to California.



*How did Dean Haring happen to hear about you?*

I think basically it was through Dr. Boyd who was head of the Division of Veterinary Medicine at the University of Minnesota. I'm not absolutely sure of that, but I know that Dr. Boyd and Dr. Haring were good friends. Dr. [Hugh] Cameron came by, I think after I had agreed to go to California, but Dr. (Jacob) Traum came by first. Dean Haring, in longhand, wrote a two-page letter explaining the job and the opportunity.

*That was the job at Davis or Berkeley?*

The job was here at Davis.

*The School of Veterinary Medicine had been . . .*

Had been authorized and Dr. Haring had been appointed dean, but of course it was not under way yet. I was invited to become part of the initial faculty.

I expected at the time that I would probably go on in surgery and I guess that was Dr. Haring's expectation, too. I had very little idea about the University of California. I knew that the University in general had a very good reputation. As a matter of fact I had heard while I was still at Pullman in 1941 or 1942 that they were going to start a school at Davis. And, of course, as we know, it had been authorized about then but when the war came on things came to a halt.

*Had you heard then that it was to be located at Davis?*

Dr. Haring explained that, so I knew it would be at Davis. But, what I was told by others about Davis was not particularly flattering. I was told that it was pile of sand with a couple of palm trees beside a railroad station. And that's more or less what I expected to find (laughter). I was pretty well pleased to find a town with a little over 2,000 inhabitants, with some trees and fairly nice looking streets.

*What was the date that you and Elizabeth arrived?*



October 1947.

*There was a news release about your appointment and it says, "To be in charge of health and of livestock, when school opens, responsible for animal clinic development."*

Yes, I guess that's quite accurate.

*It says that your interests are "in dairy and beef cattle, horses, sheep and swine disease treatment and surgery." Your research had been in ketosis mastitis, brucellosis, leukemia, tumors and sulfanilamide poisoning of horses.*

Those are things that I had published or worked on during my years at Iowa and at the University of Minnesota. It was true that I was expected to participate or perhaps be in charge of the clinical development of the new school. One of the initial assignments was to be in charge of the health of the livestock here at the University in the Department of Animal Science. And I was, indeed, in charge of this.

*Is this when you first met Dr. George Hart?*

Oh yes. I met Dr. Hart, of course, very shortly after my arrival. He called for me and invited me down to have a visit with him. We had a very nice visit, and I was suitably impressed.

The two people whom I was told about in the Department of Animal Science before I arrived were Dr. Hart and Dr. Max Kleiber. There's a professor of animal physiology at the University of Minnesota who is very famous and very active. His name is Bill [William E.] Petersen. He knew both of these people and was a great admirer of them. He particularly, admired the work of Dr. Kleiber in metabolism because he was partly in the same field. He admired the work of Hart in reproduction because he was also in that field.

*Where did you first live in Davis?*



Everybody, it seemed, was moving to Davis after the war. Students were back in force and new faculty was coming in and there hadn't been a new house built for years. Housing was terrible. We finally found a trailer, about eight by twelve feet, I suppose, and the springs were literally sticking right up through the padding that we were supposed to sleep on. We lived in that one for about a week and then we found a larger trailer on the east side of the tracks in Pedroia Trailer Park.

Quite a few of the faculty and new students lived in places like that. There was only one central plumbing station where all the bathrooms and showers and the laundries were located. It was a muddy, wet trek over there. Families carried little buckets back and forth. So it was rather primitive.

By about September or October of the following year (1948), the University brought in a number of old army barracks and converted them into apartments. The whole complex was known as Aggie Villa. We were fortunate enough to get a two room apartment in Aggie Villa (a very small living room and a very small bedroom that were connected by a hall in which there was a little stove and a bath in between). This was considered a major move up as we moved out of the trailer park.

However, the sidewalks weren't in yet. The rainy season had commenced and it was a sea of mud. We moved in and that night it just poured rain, absolutely poured. It so happened that our apartment was at the center of the building where they had sawed it in two in order to move the buildings. The seal was not good and all the water on the flat roofs drained towards the center and just came down by the buckets and buckets full--into our apartment all night long. We were up all night with tubs and buckets just trying to keep the water out of the place and by morning we were pretty exasperated.

*And sleepy!*

Oh yes, sleepy and tired. I went over to see Ira Smith who was what we would call vice chancellor of business affairs under the current arrangement, and he got a crew out there to start fixing things up a little bit. I

We lived in Aggie Villa then for two years. There are quite a number of the current faculty who lived there during that time: Perry Cupps and Hubert Heitman, Brown in soils, Akesson in engineering and others. Finally, some construction began to get underway and some of the younger people were able to save a couple thousand dollars to buy a lot and start building a house. There were a number of us who got together with a builder to build some houses. He contracted to build a dozen or so houses but in the middle of the project he went bankrupt. We found ourselves with a half completed house.



The contractor had been paid and there were a lot of building liens and labor liens and that sort of thing against our property which delayed us at least a year. And, of course, it increased the expense quite a bit.

*What did that cost you? What did you lose?*

I lost over a year's time and I think there was somewhere in the neighborhood of \$1,500 worth of liens against our property. Well, that was over one-third of a year salary, before taxes, so it was quite a bit.

*Is this the house that you live in now?*

We lived in it until about six years ago. We made a substantial addition to it in 1957. It was really a very satisfactory house and the contractor was really a basically honest fellow, I think (most of us thought so). But he was inexperienced and he had just underbid and got himself into trouble. I think that's what happened. I don't think he was trying to get away with anything.

*While you were here waiting for the school to open, what were the conditions like on campus?*

The campus, of course, was much smaller than it is today. There were about 1,200 students and everything was under the College of Agriculture. I suppose there were between 200 and 300 faculty, something like that. It was a very pleasant and congenial place to be. The honor System in those days really worked. There wasn't any question about that.

A faculty member, by and large, knew practically every other faculty person on campus, and we got fairly well acquainted with quite a few students. Of course, living in Aggie Villa and living in the trailer park, we met a lot of students, because they were there as well as the faculty members. It was a very pleasant campus.

*Was there a lot of speculation as to when the School of Veterinary Medicine would open, and that sort of thing?*



Oh yes, that was cause for a great deal of speculation by students and faculty alike. The early word was that it wouldn't start until '49 or maybe the fall of 1950. But we had a large number of pre-vets on campus, and most of them were veterans back from World War II. They, of course, were older and more experienced. Most of them were married and had families. They didn't want to sit around and waste time. They wanted to get their education over with and get to the business of earning a living. They were very nice about it. They weren't holding demonstrations or anything of that nature, but it was obvious that the pressure was there. It was coming to legislators from a great many sources and it was coming to the central administration.

### Opening of the School of Veterinary Medicine

So it was decided, in the spring of '48, that the school would be opening in the fall of '48.

*That didn't give you much time to prepare for classes did it?*

No, it certainly didn't. I was not personally involved in that. The first class to be given was anatomy. That was the only one that we in the veterinary school were responsible for in the fall semester of '48. The second one was microbiology in the spring of '49.

These were both ten unit courses for one semester, so they were major endeavors for the people who had to put them on. Dr. [Logan M.] Julian and Dr. [Kenneth B.] De Ome were the main planners of the anatomy course. They brought in other people to help them with one phase or another, but they carried the major load. Dr. [William R.] Hinshaw was responsible for the microbiology course and he too did a very fine job of putting the course together.

*Your duties, then, were still with the large animals?*

That was not my sole duty. Of course, I was assigned responsibility for the care of the animals on the farm and there were quite large numbers then (horses and pigs, beef and dairy cattle, and sheep). I enjoyed that work because I had had a reasonable amount of clinical experience, particularly at Iowa. I enjoyed seeing some animals I hadn't had much contact with before--sheep, for example.



On the other hand, I had had quite a lot of contact with swine and horses and, to a somewhat lesser extent, with cattle. I think this past experience stood me in good stead because people were watching the new faculty--what kind of people we were. The animal science people certainly were watching Dr. Hart and his associates.

A reputation can be made upon rather small things; maybe the difficult things that you might do successfully will go unnoticed. One thing that I particularly noted at that time: I was called out to castrate a bunch of small pigs (after spending two years in Iowa I had done a lot of swine surgery) and used a method of castration that hadn't been seen before in Davis. It was probably twice as fast, and I had extremely good results (in terms of no adverse reactions and that sort of thing). So word got around (and got back to me) that his new clinician was really OK--he knew his stuff.

### Ambulatory Clinic Gets Rolling

*Did you treat any privately owned animals?*

We really started our ambulatory clinic practice almost immediately after it had been announced that the school was going to open the following spring. We knew that it wasn't going to be too long before we had students. We thought we need the clientele, so I started doing private work for farms around here, for that reason--to get them used to calling on the clinic and perhaps to give us some experience as to what to expect.

I did a lot of work on students' horses. Students had horses housed around various places near Davis and we had livestock around Davis (more livestock than we have now). In fact, in those days there was what was known as the Purple Circle Club. It consisted of livestock people within a radius of thirty miles (or something like that) of Davis. They had made records in the number of purple ribbons that they had won at the livestock shows. And I considered it quite an honor, I recall, being elected a member of the Purple Circle Club, and going to the meetings with these livestock people. They were really a fine group of people. Most of that has now disappeared from the Davis area.

*Professor Jim Wilson talks about that in his memoir.*

I wouldn't be a bit surprised. He would have been very active in that. The old-timers were Carroll Howell, Jim Wilson, Tom Mead, Bill Regan, Bobby Miller (the chief) and Elmer Hughes with the swine. They were all very active in the Purple Circle Club.



Another thing that came along in about 1949: we had a state herd that was having trouble with cows going beyond their normal calving time and the calves grew to be gigantic. The cows might calve or try to go into labor several months after the normal calving. This was called to my attention and I made a study of it and wrote a paper on it. In the course of the studies I brought some cows to Davis.

Cesarean sections in cows were not especially common then. In the old dairy barn--right where the Silo is now, just about where you go through that cafeteria line downstairs to pick up a sandwich or something--I did a cesarean on one of these cows and delivered a 168 pound calf.

*What's the normal weight?*

Well, for a Holstein like that it would be around ninety pounds or something of that nature. I was involved in a little reproductive work with Professor Pat Ralston who was a dairy scientist at that time. And I got involved in a minor way with Max Kleiber's tracer team. I guess I was considered a member for a while and shared in at least one publication of that group. Then I started to get some research of my own under way on ketosis of sheep. In the spring of 1948 I taught a class in animal hygiene which was essentially for animal husbandry students. It dealt with diseases and how to cope with them on the farm. We had a large class in those days, I think about sixty or seventy students--however many we could get in the classroom. At least half of the students or more, I am sure, were pre-veterinary students and I had them again later on in veterinary school.

## **Animal Science and Veterinary Medicine**

*Going back to 1948, did you notice any of what I guess is traditional conflict between animal science and veterinary medicine?*

Well, I noticed it long before then (laughter). I noticed it when I was in school. I noticed it at Iowa State. And I noticed it at the University of Minnesota, I noticed it when I arrived in Davis, although it was not immediately very obvious. We were, at first, very small in number, We got along real well with the animal science people and I've always gotten along real well with animal science people.



But after we moved into our new building, then we could feel the problems building. Animal science, and in fact, most people on campus--all of agriculture thought that our building was two or three times larger than it needed to be for a veterinary school. If [they thought] the University hadn't used all that money for veterinary medicine, they could do more for agriculture. They were afraid that maybe we would monopolize the students and all science classes would diminish. A lot of their students were pre-veterinary students, there's no question about that.

Dr. Hart had been the team leader in animal husbandry and everybody did pretty much his bidding. He had done well by animal husbandry. Then he moved over into veterinary medicine. He has stated, I am sure several times, that when he was in animal science it was his obligation to do all he could for animal science. Now that he was in veterinary medicine, it was his obligation to do what he could for veterinary medicine.

That meant that at times he opposed policies with people in animal science. So, there's some feeling, I think, that Dr. Hart had betrayed them. That didn't help the general situation any.

There was competition for positions and, of course, we required what seemed like a large number of new positions each year and funds, and we got a lot of attention in the press and so on. There was a little bit of resentment, I think in general, from the College of Agriculture. Although as far as I was concerned it was never personal.

*I suppose that feeling of betrayal on the part of animal science came to a head in 1952 when the decision was made, I guess by the Academic Senate, as to who would teach physiology.*

Well, yes, I think that was really the peak right there. Although Dr. Hart and Dr. Cole collaborated in a lot of work in reproductive physiology, it seems that there was some kind of an underlying conflict there and it would surface once in a while.

Certainly it appeared to be necessary and very much justified that our students get a more in-depth course than Dr. Cole was giving for the animal science students in physiology. Dr. Hart went to bat for it along with Dr. Peoples and our own curriculum committee. We took it to the educational policy committee of the Academic Senate and they ruled in favor of the larger course taught by the School of Veterinary Medicine.

*I think the AVMA also had . . .*



Oh yes, the AVMA committee on education was very critical because we really had a very minimal five unit course in physiology. There was no criticism of Dr. Cole's course *per se*. He was giving everything that could be given in five units, but the students needed practically double that. That probably became a personal matter.

Along that line in more recent years, and over a period of several years, there was an effort to name this animal science building after Dr. Hart. Such names are not given to a building, as a general policy, without consultation with the department that is concerned.

The animal husbandry department was always opposed. They couldn't see naming the animal husbandry building for Dr. Hart in spite of his twenty-six years of tremendous contributions to animal husbandry. It seemed like kind of a shame to me.

### Veterinary Medicine: Health Science or Agricultural Science?

*It seems to me, from my very limited perspective, that over the years there have been these forces at work that would tend to make veterinary medicine either part of agriculture or part of health. What is the current situation in your opinion?*

This has been a situation, I suppose, since veterinary medicine became a well-recognized discipline of its own. It has origins both in medicine and in agriculture. Some of the leadership in the past has come out of medicine and there have been important people who were primarily agriculturalists.

What veterinary medicine really does is stand on its own two feet and relate, let's say, to medicine on the one hand and agriculture on the other. As you undoubtedly know, in the science of veterinary medicine we study diseases transmissible between animals and man, which are exceedingly important to human health. Much of the progress in certain areas in human health has been in controlling the animal sources of disease. Brucellosis, tuberculosis and rabies and some of the parasitic diseases are examples of that.

On the other hand, the necessity for food and fiber and control of animal disease is absolutely essential to both. We absolutely cannot have a healthy livestock industry and a good supply of meat, wool, eggs, butter and cheese, Kentucky fried chicken, and all that sort of thing without controlling these diseases.



We have another service--that is caring for companion animals which are extremely important to a great many people. Some are purely recreational, some provide a tremendous amount of emotional support, love and affection which many people are not able to find else where. Dogs or cats are extremely important to the emotional welfare of children and older people or those who do not have others to love them.

So we have our input in all these areas and sometimes for various reasons we may talk a little more about one than about the other. For the last, shall we say, twenty years or something like that, maybe we've emphasized a little more the contributions to human health. In the areas of radiobiology and cancer research, the areas of immunology and infectious disease, we've had a tremendous input--and input more directly in human medicine such as heart surgery, neurology and certain areas of animal and human behavior.

There's been a lot of emphasis in advertising what our contributions and our role in these areas have been. There is very little money for research related to agriculture. Just like anybody else, we gravitate where the money is and the money for research for veterinarians by and large comes from the National Institutes of Health and the National Academy of Science which are more interested in human health problems than in animal health problems. But, the situation is changing now. People are getting more concerned about food supply in the United States and the world. The pendulum is swinging back toward our contributions to food and fiber and I think basically that that is good.

*Has the animal industry increased its support because of this change?*

The Land Grant Act legislation with the development and the support which followed it is one of greatest success stories in the world. It made possible the agriculture that we know in the United States to day (the leading agriculture in the world). It also made possible the farm revolution because farmers became more and more efficient. Then, the inventions that came along, the provision of power and labor saving devices and so on made possible the shift from a rural to an urban society.

Until fairly recently the legislators and the congress, the president and the governors have supported the idea that all the people should support agricultural research because in the end it is the total population that benefits from it. That is very, very true. If farmers can control weeds better because of research done at a University, their yields go up and the price of the product goes down. There may be a temporary benefit to the first farmers who develop the advance, but as soon as it becomes general knowledge, the yields go up and the prices go down. The public gets the benefit and the farmer is still just getting enough to live on.



This has been a tremendous benefit to the public, but the sentiment has changed now. Most of our legislators and congressmen now come from urban areas; they really do not understand agriculture and they feel the farmer should be just like General Motors and should support his own research.

The major agricultural industries are realizing that now and they are developing ways to pay for their own research. One of the ways they are doing that is through marketing orders. If there is a marketing order for a commodity, the farmers themselves can vote to say that a tenth of a percent, shall we say, of the price for all cattle sold will go for research on cattle. They'll set up an agency, the State Department of Agriculture will supervise the collection and the disbursement of the funds, and the industry will have a research committee that will determine how the funds will be spent.

The dairy industry, for example, in California has had a marketing order that would allow them to do some research on developing new products: better cottage cheese, better yogurt (flavored yogurt), maybe improved ice cream or things of that nature. But they are now expanding into other areas. As a matter of fact, the first appropriation that they made in any other area was to me for mastitis research. I'll discuss that when we come to the research portion of the interview.

### **Veterinary Medicine and Human Medicine**

*What can you say specifically about the relationships between veterinary medicine and medicine?*

They have swung back and forth to a certain extent. We had common roots. At many points in the past there have been times when veterinary students and medical students have gone to school together in their basic sciences and separated for the clinical aspects. There far too much have been times when they were separated but during the last thirty years there has, I think, been a growing realization of a commonalty of training and of purpose, at least at the higher echelons of the profession. But at the level of the practitioners out in the towns it's highly variable. Some of the physicians and some medical students, for example, still consider veterinarians as purely horse doctors in the pejorative sense. In fact, Dean Tupper is reported to have said when he came to Davis that he considered veterinarians to be all horse doctors in the pejorative sense. (He very quickly learned differently.) But it is still a continuing problem, and we continue to have a burden of educating the M.D.'s.



And, I think it's universally true, certainly in this country, that the veterinarians know a great deal more about human medicine than the medical people do about veterinary medicine. This is something we live with. Sometimes we get irked by little incidents that happen, and other times we have a great deal of satisfaction when we receive some of the recognition that we feel is due to us. But we continue to have to work at it.

*There is an arrangement for faculty both in veterinary medicine and medicine to receive supplementary income that would be at least a little closer to the income they could make as private practitioners. Can you describe something about the mechanics of that?*

Well, this is a fairly recent development. I was not involved in any way in developing the arrangements or advising the dean. And I am not the best one to answer that particular question.

In general, the income for this little bit of extra salary has to come from sources outside the University. In general, some of the clinicians who are called out on consultation on cases turn in the consultation fees to the University. Some of the other people who, because of their expertise and one thing and another, are called out on consultation with the large farms or corporations or pharmaceutical houses or whatever, also turn in their consultation fees to the University. There is a little bit taken off certain grants that the faculty members attract which goes to the University and pays for this extra income. That is, in general, where it comes from. There are two or three different strict full-time scale salaries and the highest ones go to people like neurosurgeons and orthopedic surgeons and some special pathologists in the medical school. In the veterinary school our additional income is substantially below that and I think it is more or less comparable to what some of the basic scientists in the medical school also receive. We do not differentiate between clinicians and basic scientists; it's an across the board thing.

### Personalities in the Division of Veterinary Science

*Did you get to know very well the people in the Division of Veterinary Science--I'm talking particularly about people like Haring, De Ome, Madin, Schalm and Julian who had been or were still in Berkeley?*



We had several meetings with the Department of Veterinary Science in Berkeley and I met these people. Shortly after I arrived, Dean Haring himself drove me to Berkeley. I did not have time to get well acquainted with Dr. Haring, but my wife and I were guests of Dr. and Mrs. Haring for dinner one evening--a very delightful time--not too long after we arrived. I went to one meeting in San Francisco with him and then one or two meetings in the department in Berkeley. One little story that somebody else may not have mentioned: Dr. Haring stopped at the Milk Farm and ordered a glass of milk.. He said he'd like to take it with him and they poured it into a container they had. He took it to Berkeley and injected it into a guinea pig and proved that it contained viable *Brucella* organisms. That was before brucellosis control and before pasteurization of milk was common. (That guinea pig, for a long time, was in our pathology museum and I always used it as a teaching device when I was teaching pathology.)

On my first visit to Berkeley, I remember I had a good visit with Dr. Schalm, particularly about mastitis. I had been somewhat involved in mastitis research in Minnesota and of course he was deeply involved here in California.

*How about Dr. Jerry Beach or Dr. [W. H] Boynton--did you know them at all?*

Dr. Boynton I had met two or three times. Dr. Beach I knew somewhat better because he moved to Davis. But he was busy with his poultry work and I was busy with other things and I didn't get well acquainted with him.

Of course, I got well acquainted with Ken De Ome because we taught together for a couple of years; I'll want to say more about that.

### Points of View on Curriculum

*Would you say that there were perhaps two philosophies as to how the school might develop? One of them, perhaps, could be called the Hart philosophy and the other one the De Ome philosophy? Would that be a fair way to phrase it?*

I do not know, really, whether it is or not. Now it may be. I never did understand the conflict.



*You're speaking of the deep difference of opinion between Drs. Hart and De Ome?*

Yes.

*Resulting in Dr. De Ome leaving the school faculty?*

Yes. As far as the course philosophy was concerned, the curriculum for the first two years had already been decided in Berkeley. We really had only to make it operational. The curriculum for the last two years was decided after Dr. Hart became dean and after the transfer of activities to Davis and largely within the curriculum committee that Dr. Peoples chaired, and of which Dr. Schalm, Dr. Cameron and I were members (perhaps some others were on it).

I don't recall that there was a sharp debate over what might be referred to as the De Ome philosophy of teaching. There were some differences of opinion, just as there are still differences of opinion today with respect to the new curriculum that we are operating on now. But it's not a divisive thing and it was never my impression that it was divisive then. There were those who thought ten units in a course were too much, and eventually the large ten unit microbiology and anatomy courses, were divided. It's interesting to see that now we're back again to ten unit courses.

These things wax and wane and the advantages and disadvantages were discussed then. But Haring, De Ome, Julian, Schalm and perhaps Madin were involved mostly in looking at the curriculum. They were taking a somewhat integrated approach which antedated the programs at Western Reserve and Stanford that we often looked to as pioneers in these areas. They were trying to bring anatomy together and get micro and gross anatomy together and to present material on micro-anatomy and the normal cell and the abnormal cell in an integrated manner so as to relate to biochemistry and physiology and pharmacology.

When it came to the people who were actually going to be in charge of these courses, perhaps they didn't go along as well with the new idea because they had not been involved in the initial planning.

In the case of pathology and histology--this was going to be a big ten unit course, and it, was so for at least three years. This was of particular interest to Dr. De Ome. I wouldn't be surprised if he had thought he was going to be in charge of this part of the teaching and this course work, and so on. Being very new and a very young member of the faculty, I didn't know everything that was going on and I hadn't been in on a lot of the planning in Berkeley. So I just accepted things as they were and did what I was assigned to do as well as I could.



In the case of this course, in the spring (about January) of 1949, Dr. Hart called me in and told me that he wanted me to be in charge of the pathology course they were going to teach that fall (that September). Well, that was histology and pathology. And it was ten units, five lectures and five laboratories a week. No preparation had been made so it was a big job to try to gather together enough pathology specimens and enough histologic specimens of various kinds of disease plus all the normal histology and so on, to get it going.

Dr. De Ome was assigned to help me teach this course and I'm sure it placed both of us in a little bit of an awkward position because Dr. De Ome was a well known scientist, a well established associate professor. He undoubtedly had thought much on how this course should be taught. Then, a very much younger, less experienced person was assigned to be in charge of the course (unexpectedly), not having the background of the real concept and so on.

Well, De Ome and I talked about it and he enlightened me further as to how they had planned the curriculum; how the course should be taught. And that sounded good to me and we went at it I think successfully. He carried a little heavier load insofar as histology was concerned and I carried a little heavier load as far as pathology was concerned. Really I think it went very well. I'm quite satisfied that it was a good course and some of the materials that we got together were still in use twenty years later.

Dr. De Ome was, certainly, a real gentleman about the whole thing. We never had any conflict if he had suggestions to make from time to time, they were always made gently and helpfully. He was an excellent teacher.

*Was this integration between histology and pathology somewhat artificial?*

Yes, I think it was somewhat artificial. Partly because one of us handled more histology and one of us handled more pathology. I think that probably it can be handled a little better now with our very vastly increased knowledge of structure and function within the cell and of the pathological changes that are within the organelles of the cell and so on. This is where many of the basic changes are taking place.

In those days we didn't know anything about that. We saw what we could see under the light microscope and we didn't have the grasp of the total picture of what's going on either in the normal or the abnormal cells that we do today. I think it's partly because we know so much more now about what goes on within the cell (and how it relates to the whole organ and so on) that it is easier to accomplish integrated teaching at the present time.



To a certain extent we had two courses that were just more or less brought together. But we have that trouble with our integrated curriculum today. I know that some of the courses which are integrated have already broken down to so many weeks of this, so many weeks of that. And students are signing up for this part and not that part, and so on, as electives you know. Not the veterinary students who may have to take each segment, but other students (graduate students and so on).

I feel that there is a tendency to go too far with this idea of integration, and perhaps we, in our school, have gone too far in certain areas--we may back up to a somewhat intermediate position. I feel that many of these bodies of knowledge need to be treated more or less discretely with suitable constant illustrations on how they apply to other areas such as pathology and therapy or drug action. But I think that microbiology and immunology and things like that need to be treated as discrete subjects integrated only where it is natural to do so.

*The AVMA visit in 1952 resulted in those major curriculum changes you've already talked about but you were visited twice during your deanship by the AVMA curriculum committee, in 1957 and then again in early 1962. What were their recommendations after those visits?*

At the time of the '57 visit, we still had histology and embryology taught over in the zoology department. The committee felt that that was not the best arrangement and urged us to bring it over into the school. They recognized that some areas could still be improved (as I think they always could) or at least they had some recommendations for improvement of various areas. But they didn't lay down any conditions. They had a lot of very nice things to say, and their recommendation at that time was that we be moved from public probation to public accreditation. It was not too clear to me exactly what that meant or what they expected us to do to achieve full accreditation. So I wrote to the chairman and asked him about these matters; he didn't respond by letter, which I understand, and said that he would rather just talk to me on the telephone. He called and said that for the most part they liked very much what we were doing, but they didn't have any specific requirements for full accreditation. It was a matter of policy, though, not to move a school from public probation to full accreditation at one step. They always went first to public accreditation and if things continued going well, at a later time to full accreditation.



What they essentially said was, "Well, as far as we're concerned, you're eligible for full accreditation now, except that this is our policy and we'd like a few more years to see that you maintain your progress." That was just fine, and that was rewarding.

They came back then, in the spring of '62 and made another examination and notified us of full accreditation and, of course, we've had no problem along that line ever since.

You may have noted, in various [press] releases the past couple of years, that on two occasions we have been voted number one veterinary school in the country by the graduate deans and various people. We've come along very nicely.

*In addition to the curriculum changes that you've already mentioned did you make any other major curriculum changes?*

I don't think we made any major changes. We made adjustments as we went along. We started with a course in therapeutics for example and then later on that was dropped which I think was proper. It was a carryover from an older time. Therapeutics are best discussed--provided you have a good pharmacology course--when you're talking about the diseases in the systems, rather than all lumped together in a single course. We strengthened our pharmacology course and dropped therapeutics and added therapeutics in with the other clinical courses. We did things like that along the way and didn't make any major curricular changes actually until the major revision four years ago.

*What aspects of veterinary medicine education do you feel are being overlooked now or underemphasized?*

As the field is so broad, covering as it does everything from elephants to shall we say insects, and overlapping into the human field to quite an extent, it is certainly impossible in our curriculum to prepare students in every area. We have partially met that problem by developing track programs for the last year so that students can emphasize one area of veterinary medicine or another. We have, I think, in most schools in the last twenty years tended to swing away from medicine for animals used for food to more of an emphasis on human-oriented research. That is because the money has been there.

Insofar as the training of students is concerned, we have tended to emphasize the companion animal (which means horses small animals and other kinds of pets).



That is partly because of the interest of the public and support by the practitioners. Another reason is that it is easier to do high class medical practice insofar as the individual patient is concerned. Clients, will spend money for laboratory tests, x-rays, and good surgery on dogs and cats, pet horses and race horses. But when we get into cows and sheep (food animals), then it's really an economic matter. And as far as the individual animal is concerned (with a few exceptions, of course) the owner cannot spend very much. Of course it doesn't cost nearly as much to do first-class surgery on a dog as first-class surgery on a cow for example, just because of the mass and the bulk and the amount of drugs concerned. Many of the small animal hospitals do surgery which is just top, really first-class surgery. Well, that's appealing to the students and they would rather do first-class medicine and surgery where they can use the lab tests and the x-rays than take a guess. But economically it's not feasible to give this much attention to the individual food animal.

So, the food animal has tended to be neglected. In recent years we have recognized that and the public is recognizing, too, that food is more of a problem. With the change in economics insofar as food animals are concerned, the industry is also recognizing that they need a somewhat different kind of veterinary service, in which we do what in many ways we've always done best, but have tended to neglect for various reasons in recent years. And that is herd practice.

Veterinarians have, traditionally, been better trained and better cognizant of, say, population problems than has the physician who is strictly, for the most part, individual oriented. We went through maybe twenty years where we tended to emphasize, the individual more too, because that was first-class medicine. But, we're going back to our consideration of our herds and flocks as populations again, and that is being greatly emphasized and will be emphasized more in the future, I think. In terms of total society, it's where our greatest contribution will be, and where the greatest contribution has been.

### Extending Veterinary Medical Education

*What in your opinion is the best way to extend the reaches of veterinary medical education and training, particularly in the state of California?*

There is a strong movement at the present time that's been gathering strength in recent years for continuing education of the practitioners that are already out. I think this will probably be required for continuing licenses of practitioners, and at the present time it is strongly encouraged by the practitioner organizations themselves. This is probably the most effective way, keeping, as much as we can, the hundreds of practitioners.

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Donald E. Jasper



out on the field as up to date and as skilled as possible. Everything we can do to upgrade their performance has a multiplier effect. We can have one good clinician here, who can teach one hundred--it's multiplied.

The other area that I would really like to see enlarged is the extension service. Our extension veterinarians have done a great job in the past and they're doing a great job at the present time. I'm familiar mostly with the work Dr. Bushnell and Dr. Ben Normand are doing at the present time. They're doing a tremendous job of extending information to the livestock food animal practitioners and to the livestock food animal industries. (Goats, incidentally, are increasing substantially in numbers in California. We probably will need to be paying more attention to them.) These people render tremendous service to the industries and eventually of course, to the public. I think there is opportunity to increase their numbers and at the same time to increase their participation in the teaching program in the school particularly in the area of food animal medicine. They're out in the field all over the state and they're seeing what's going on. They're solving the difficult problems. Their help is requested by the farm advisors, by the industry and by the veterinarians who are serving the industry. They act as a liaison between our basic scientists and the field workers, and they're very often involved in research and cooperation with our basic scientists. I suspect that we can bring profit to everybody if we enlarge, this activity:

*At the present time there are a little less than a hundred new veterinarians graduated each year from the school. Assuming that California could use more--what is the best way to get them?*

Well, we can continue to do as we've done in the past: import graduates from other schools.

*I understand that two out of three now are from schools outside of California.*

I think that is true insofar as those taking state board examinations are concerned. But not all of these come to California to practice. I don't know the exact figures on this, but I suspect that we still get more from out of state than we do from within the state.

It's exceedingly difficult to forecast and say that we need so many veterinarians or twice as many or whatever. Personally I suspect we are just about meeting our needs and I have some apprehensions about all the new schools and older ones doubling enrollments

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Donald E. Jasper



To come back and answer your question, if we need more veterinarians, my personal opinion is that it would be better to establish a second school in Southern California. But whether we have a second school or whether we don't, I think that it would be worthwhile for the public to establish a food animal medical center in the general area of Tulare, where students interested in food animal practice could top off some of their clinical training. It could also be a center for diagnosis and field research in food animal problems. I believe that that would be worthwhile and that it could be operated from this school. Or it could be operated jointly by two schools if we should have two schools.

### Teaching and School Courses

*Coming back to your teaching, with Dr. De Ome--in 1948 your original thought was to go into surgery and I think you said that Dr. Haring had expected you to work as a surgeon?*

I suppose so. My background up to that point had been rather broad. I'd had a good surgical training, but at Minnesota I got some pretty good training in pathology and physiology--all good background to various clinical avenues. Furthermore, I guess my goal was not firmly fixed and I've always been of a disposition to respond to some challenge or some request, "Can you do this?" So, I responded (thinking that it might be temporary and that I would probably get back into clinic work, but also thinking maybe I would stay with pathology because I rather liked the pathology that I had done).

I taught the course, was in charge of it two years with Dr. De Ome and it was, I think, just before the start of the second time through that we had a faculty meeting in the Tower Room of the Animal Science Building. Things seemed to be (near as I could tell) going smoothly and Dr. De Ome made a rather innocuous suggestion about something or other. Dr. Hart jumped to his feet and shouted, "Young man, that's the last thing I'm going to hear out of you. We're not going to have you running this veterinary school, and the meeting is closed!"

That left all of us absolutely dumbfounded. The writing seemed to be on the wall, that De Ome's future wasn't too bright (laughter). But he did stay and we went through the course the next spring. But by July he accepted an appointment to be in charge of the Cancer Genetics Laboratory in Berkeley. He has done a tremendous job of running that ever since.



Well, that meant that we needed some more help. I'd been after Dr. Hart about recruiting Don Cordy who was teaching at Pullman. The school at Pullman was having some problems and I knew that he might be available. Dr. Hart's reaction was, "No, he's too hard to handle," and he wouldn't hear of it. But on the other hand he couldn't find anybody else. So, finally Dr. Hart said to me, "Well, if you think you can handle him, we'll give him a try."

So, Dr. Cordy came down and, of course, there were no troubles with Dr. Cordy and he did a tremendous job. And by the time a year had rolled around I told Dr. Hart that I thought Dr. Cordy should be in charge of pathology and Hart agreed.

*This, then, leads to the fact that you began to teach in large animal medicine?*

Yes. Dr. Cameron was initially asked to be in charge of medicine, surgery and the clinics. He was after me to come back and be in that area.

I knew that there were some problems in the clinic area, but I wasn't particularly well informed about them. I made my decision with respect to pathology, with the expectation of going into medicine (probably large animal medicine) rather than surgery because Don Wheat was already on board and was going ahead in the surgery department.

It was about a week or two later that Dr. Cameron was replaced and Dr. [John F.] Christensen was put in charge of medicine, surgery and clinics. That left things a little bit uncertain with respect to what would now be expected of me, but I did teach large animal medicine and I worked with medicine cases in the clinic and a few surgical cases as well.

*You were with Dr. Rhode?*

Well Dr. Rhode was also in the clinic. Dr. Rhode was doing both surgery and medicine. He wasn't limited to one or the other and, of course, I was senior to Dr. Rhode, as far as years of age and years here in Davis, and so on.

At one time I performed a Caesarean section on a cow as a surgical demonstration at a veterinary conference here at Davis. Dr. Wheat served as my assistant. It would seem unlikely now, of course, and even impossible, but it wasn't out of the ordinary then.



*What were Dr. Cameron's primary difficulties? I believe that his own background was not particularly that of a clinician?*

That is correct. He was in microbiology, infectious disease, and he was given that clinic responsibility because he was really the only senior man around who might take it. I think, generally speaking, that he contributed quite a bit while he was there and he certainly got the thing launched. It was a big undertaking to do so. He was responsible for hiring many of the first people who came along and some of them proved to be very good.

*Can you remember who specifically?*

Dr. Wheat, Dr. Rhode and Dr. Christensen (who succeeded him as director of the clinic and medicine and surgery). He brought Dr. [Robert] Cello as a junior member for a year. Of course, Dr. Cello and Dr. Hart didn't get along very well and Dr. Cello couldn't see any future as long as Dr. Hart was dean and I think Dr. Hart couldn't see any future for him either (laughter). So Dr. Cello left.

Dr. Cameron brought in Dr. [J. W.] Kendrick, and quite a number of good junior people that have since contributed a great deal. After we had a dozen or so in the area, it's not surprising that they collectively had a better grasp of this whole clinic area.

*And then Dr. Cameron went back to teaching animal hygiene?*

Yes.

After about a year, I think, I was asked by Dr. Schalm to come into the pathology department, which was really the best home for me because I had good training and experience in pathology and basics on one hand and a lot of good clinical experience on the other. I can draw upon both very well in the pathology area, and I was placed in charge of the clinic conferences plus some courses.

That was, I think, a very good part of our program in those days. We had some very fine clinic conferences. It's not possible now to conduct them as we did then because of the number of students and faculty, and various other things. But we had some very fine ones at that time.



*Prior to that, you also taught autopsy, did you not?*

Oh yes. When I left pathology, that left for the time being Dr. Cordy as the only pathologist and he was too busy to be doing the autopsies too. I was still doing the autopsies and Dr. Howarth did some of them too. So I think for at least one year Dr. Howarth and I did most of the autopsies. Then I think Jack Moulton was the next one to come into pathology and then pathology started picking them up again.

*That first year, were you teaching in the Animal Science Building?*

The first year of teaching pathology was there, yes. We taught anatomy twice in that building. We taught microbiology once, pathology once and we must have taught pharmacology once.

*I think that it was in the fall of 1952 you taught 251A, did you not? That took every afternoon and Saturday mornings, and you also supervised senior student training in the diagnostic lab. I wondered if this was a heavier than average teaching load? It seems like a very heavy one.*

It was not heavier than average for that early faculty. We were all pretty much loaded down. It would probably be heavier than average for now. A good many of us were drawn in to teach courses we would not ordinarily be assigned to. I had as much of that as anyone, starting with pathology and having the autopsy and the laboratory diagnosis or clinic pathology business, teaching medicine, teaching in clinical biochemistry. So I had a varied teaching assignment and some of the students had me for at least three or four different classes, including the pre-vets in the hygiene class.

*And you are currently teaching diseases of the mammary gland?*

Yes.

*Well, it would take a wide background to be able to teach all of those courses. What teaching experiences gave you the most satisfaction?*



Teaching that animal hygiene course gave a lot of satisfaction. Teaching the pathology course gave a lot of satisfaction. Teaching in the clinical pathology laboratory or laboratory diagnosis I enjoyed a great deal. And those couple of years that I mentioned about being in charge of the clinical conferences (clinical pathological conferences) proved a very satisfying experience.

Maybe the least satisfactory experience in my teaching was in the area of clinical biochemistry. My background was not as good as it should have been in that area. I always regarded it as temporary because so and so is away, or until so and so finishes his graduate training, or something of that nature.

Of course I enjoyed the course on the mammary glands and mastitis because that really is my area and I'm very much at home in it.

*Did you teach as dean?*

No. Except one course that the dean has traditionally taught, Medicine 270--"Jurisprudence and Law for the Veterinarian." I think the dean still teaches that. Of course, the nature of the course has evolved over the years, but that was my main teaching activity as dean. I think it's Bill Pritchard's main teaching activity.

## Using Haring Hall

*When was Haring Hall ready to be used?*

We moved into Haring Hall in January of 1950, so the spring semester we would have had the second pathology class in Haring Hall.

*Were you satisfied with Haring Hall?*

Basically yes. I think it was very well planned and very well designed. With any building, the people that use it find some faults and things they'd like to change, but it was and is a very good building.

One thing we really missed in those days was air conditioning. The ventilating system would be the thing that I would have faulted the most as far as the planning of Haring



Hall was concerned. It was planned by bay area architects and I think they must have planned it for bay area climate. They had an air circulating system that washed the air, which meant that it was humidified. It would get terribly warm and the system was not supposed to be opened up to the outside so that the hot air would circulate all night long and would just start over again the next morning. Many a time during the summer we would walk into a hot, humid office that would be eighty to ninety or more and it might be very cool and pleasant outside in the early morning hours. Of course, that resulted in our putting aluminum foil up on the windows and the architects complaining about spoiling the looks and sometimes the janitors would be instructed to tear it down. Then we'd put it up again to try to keep the sun rays out and some of the awful heat.

For the first ten years, especially in some offices and of course, I was in the dean's office for eight of those, it was very bad. We got all the morning sun. Finally, about 1960, we started putting in room air conditioners.

*Do you still use your room air conditioner?*

Oh yes.

### Outstanding Students

*Do any outstanding students come to mind?*

If I went down the roster or looked at their pictures, I would recall a great many outstanding students and some that have had outstanding careers since. Of course, in the first class were Norm Baker, Hal Parker and Blaine Mc Gowan who all eventually joined our faculty. Charles Cornelius would be one of our more prominent alumni. I actually was the one who brought him back to be a graduate student.

*He's now the dean in the school in Florida?*

Yes, Florida. So I'm glad to claim a little credit for bringing him back as my graduate student and helping him get started in the academic and research world in which he's succeeded admirably. After I became dean Dr. Cornelius finished his thesis under Dr. Kleiber's direction.



Every class has some students that excel academically and some of these will excel after they graduate. Some that didn't excel particularly well, academically moved to the front after they graduated, professionally and sometimes academically. We have some surprises from time to time with people whose grades were, say, average or B's, or sometimes even lower. They may be out of school for a little while and they come back and want to go to graduate school and they show some enthusiasm and we admit them and some of them are absolutely tremendous.

### The First Admissions Committee

*Going back again to the opening year of the school in 1948--you were on the first admissions committee, were you not?*

Yes, Dr. Peoples was chairman and there were Dr. Cameron, Dr. Schalm, Dr. Douglas and I.

*Do you recall some of the circumstances, the number of applications you had, the number of students that you admitted, what your standards were and so on?*

I don't remember the exact number of applications, but I expect there were in the neighborhood of 200. Most of them were veterans of World War II. There were a few civilians who applied.

The qualifications of the applicants were a generally very good and, of course, there were probably 200 or 300 pre-veterinary students enrolled on the Davis campus and many were applying for admission from the Davis campus. Some of them were neighbors in the Pedroia Trailer Camp. Many of them were married. They were a very fine bunch of applicants and most of them had been in the war for four or five years. They were a very mature bunch. They had seen a lot of life and had seen a lot of death, and they carried heavy responsibilities. We had one colonel applying and he was admitted. And we had others--captains and lieutenants and majors and sergeants. We had people from the navy and the air force, the army and the marines. We had the same kind of difficulties in making choices that committees do today. We had many applicants and only forty could be admitted.



We did require animal experience, preferably farm experience, and we looked at their grade points and their backgrounds. The veterans had first choice. There was one exception to that and that was David Gilhooly. He was the oldest member of the entering class. I've forgotten exactly why he didn't go into the military, he may have had some minor disability (flat feet or something like that), but he didn't go. He was married and he had several children. He had served as a herdsman out here with the farm division. Anyway, he worked in the livestock activity here for several years and was hoping to get into veterinary school. So Dave was taken, and the rest were veterans.

They did not object to the fact that Dave was not a veteran. They accepted him very well and thought it was right that we should take him. In fact, when the Kern County Land Company made a couple of \$1,500 scholarships available for senior students, they were very happy to see that Dave got one of these scholarships. Most of them had some kind of GI benefits to help them along. Dave was entirely on his own and it was pretty rough.

There were no women in the first class; there was one in the second.

One of our applicants was from the southern part of the San Joaquin Valley and is now in Bakersfield--Charles Burger. At the close of our deliberations, I remember that the committee had decided we would take Charles but there was some technicality. There was some form that wasn't signed or something that wasn't quite complete. I remember that Dr. Peoples wrote to him to please have this in by the 21st so that we could consider his application, or something of that nature, knowing full well that he probably wouldn't get the letter until the 22nd. Chuck called up as soon as he got the letter all worried that he may have been left out [laughter]. The decision had really already been made.

*Actually you took in forty-two.*

Yes, we did. I don't know whether you talked with Dr. Peoples about this, or maybe somebody else will remember the exact circumstances, but for one of them I think we had simply miscounted. For the other one, I think that we more or less felt that we just had to take him and we were willing to go forty-one, and then discovered there had been a miscount and we already had forty-one so now we had forty-two. It was something like that. I'm glad it was that way because number forty-one and number forty-two, whoever they were, turned out very well.

*Was there any special effort to select those who had had large animal experience?*



Oh yes. That was not, maybe, an absolute necessity, but it was fairly close to it for the first few classes--that they should have had some large animal experience.

*Was this through any influence of the livestock industry itself?*

I don't know that there was any direct influence. I suspect that the strongest reason for that was the strong animal experience that was absolutely required at Cornell. They had to take an examination and various things. Of course Dr. Haring and Dr. Cameron were from Cornell. I think many of us had a lot of that feeling: we had a real responsibility in the area of food animal medicine and we believed we should be taking students with some background and leanings in that direction, but not exclusively so. Of course, as years went by, that broke down quite a bit.

*Did the Livestock Association have a good deal to do with the establishment of the school?*

Actually, their role was really not too great. When Mr. Garrod first started trying to drum up support from both the sheep and the cattle industries, they said, "No, we are paying enough taxes already and we don't want to pay anymore."

*One reason that I haven't asked questions in regard to the origins of the school is because it is so very well covered in the short history of the School of Veterinary Medicine that you wrote back in the early '60s and I just didn't want to burden you with the repetition of the same material.*

Well, there's no point in going over that again because it's written better and more accurately than I could recite it now.

*Going back to the admissions committee--I don't suppose you had any applicants who were transferring in from another school of veterinary medicine? What is the policy today regarding transfers from other schools?*

It has always been possible, and I think it still is possible to transfer from another school, provided that the work in the other school is satisfactory and provided



that they can transfer in at an appropriate place (keeping in mind the courses that were taken). If they were going to transfer into the second year they would need to have had the courses that our students already had. Possibly they would have had a little bit more, depending upon the curriculum, but they couldn't transfer in such a manner that they would miss essential courses.

Of course, there had to be a vacancy in a class for them to transfer into. There may have been an exception or two along through the years in which maybe an extra student was brought into a third year class or something. I don't think any extras are brought into first or second year classes.

We did have one drop out of the first class to enter medical school and we brought in a transfer student, Dr. Humphrey, from Colorado. This was a California boy who had gone to Colorado and he had an awful time with allergies or things of that nature in Colorado which he didn't have here. That was his principal reason for wanting to transfer and we had a vacancy and he transferred into this first class.

There have been a number of transfers down through the years from quite a number of schools, but it is not common. Not every class has someone transfer into it by any means.

*I would imagine it would be risky to try to get in that way because the fallout rate is so low. I suppose there are some classes that have no vacancies.*

That is true and anyway, you have to have been in another veterinary school. So most continue in the school in which they started.

*I know of one young man who was unable to get in here but was able to get into Tuskegee and then transfer here.*

Yes, I think I know whom you are talking about because I think, generally speaking, the school here would be more attractive than Tuskegee especially to a California resident. The man you speak of was back there when racial feelings were running pretty high and it wasn't really altogether safe for him to be there, apparently.

*You made very clear the composition or the kind of first class you had. In general terms, how would you compare the first four or five classes with the classes of today?*



I think the major difference is pretty well summed up in the word maturity. I think that scientifically they would have had a somewhat different education, certainly. Molecular biology was hardly dreamed of and in some ways, in terms of basic biology, our present students are better prepared. But I think the students then had a much better concept of history and economics, and the difference between our country and its values and other countries. They had experienced more and they had received a much better education in these things in high school and college.

*In those days actually, only two years of pre-vet were required, but I assume that most of them had more.*

Yes, most of them had more.

*And now, what is the minimum..?*

That's a little bit hard to answer, but for all practical purposes, I guess we should say four years. Although I guess technically it is possible to get in a little younger.

*Are the admissions practices of the School of Veterinary Medicine based upon the admissions practices of the campus in general?*

Well, of course, they have to be eligible for admission to the University of California.

*Oh yes. I read somewhere recently that the campus admission program plans in the future to rate each applicant numerically. For example, forty points for the ethnic disadvantaged, twenty-five points for academic promise, twenty points for educational disadvantaged, ten points for leadership and so on. I wonder if this will have any effect at all on the admissions policies of the School of Veterinary Medicine?*

I don't know anything about that proposal. Of course, anything that affects admissions to the University of California would have an impact on admissions of professional students. Inevitably quite a number of students entering the professional schools of the University come from the University. So it might have an effect upon the kind of students that we later admit and it might very well have an effect on the proportion of students that come from this or other University campuses.



One thing that is quite different now from the early days of the admissions committee is the number of girls that apply and the number of girls that are admitted. In the very early days, the number of girls to apply was quite low. Certainly the committee looked much harder for factors of motivation and experience in the case of the girls than they did in the case of boys. The girls had to be very clearly motivated and have a substantial animal experience. The girls in the early years on the campus were often agriculture majors and they dressed in jeans and farm clothes. The first girl that was admitted, Miss Dean, always wore jeans and didn't do too much to try to make herself look feminine. This tended to be true for the girls admitted in some of the early classes, even though as the years wore on, most of the girls on campus wore dresses. There was a feeling that if girls were going to be veterinarians, they should de-emphasize their femininity and play somewhat of a masculine role.

This tended to distress me a little bit because I felt that the girls really should play their feminine role and dress attractively, and that it would be better for the profession and for them personally. I'm still very much convinced of that and in recent years (in the last ten years) the girls, I think, have been much more willing to be feminine at the same time they're studying for veterinary medicine.

I have observed that some of the girls who de-emphasized dating and femininity found years later that sometimes practice can be a little empty when they're all by themselves. I've followed up on the girls who graduated about eight years ago and I wrote an article in the California Veterinarian which indicated that those who had graduated to date were reasonably active professionally and mostly satisfied. One was bitter about her lot. Since then I've counseled some other women graduates who seemed lost and uncertain of their future.

I recall one student [a man] who applied from the UCLA campus. This was just after I'd becoming dean. The admissions committee had gone down to UCLA to interview students. They decided against this UCLA candidate who presented a very fine record. In fact, it was very close to a straight A record and, according to Dr. Peoples who was chairman and other members of the committee, there wasn't any real specific thing that they could point to as a reason for not taking this student. But they just felt uneasy about him and they didn't take him.

It wasn't too long before I got a call from Chancellor Freeborn who'd had a call from President Sproul, I guess, who had a call from Mr. Pauley, chairman of the Board of Regents, wondering why this student wasn't admitted to the veterinary school. Of course I had to answer the question and provide the reason (and I've already indicated that there wasn't any obvious reason why the student was not admitted, only that the committee felt uneasy about him from the interview). That didn't sound very convincing under the circumstances.



So, while I was wondering just exactly how I would phrase this reply, I got a call from the registrar's office, from Mr. Schonz who had receive a letter from the registrar at UCLA which said, "Please return the transcript for such and such a student. Please find enclosed the true transcript."

This student had managed, apparently through other students who were employed in the registrar's office at UCLA, to falsify his record because the true transcript was barely passing.

*What year was this, did you say?*

It was in 1954, at the time I became dean. That was one of the first problems presented to me. I was replying to this request and certainly that telephone call made the reply much easier.

*You and the committee must have had some intuitive feelings [laughter] on that.*

Well, I think admissions committees do. I don't say that they're always right, but they do have these intuitions. And the interviews are helpful, I'm very much convinced of that. We learn a lot of things that sometimes we don't expect.

I can remember another student at Berkeley that we interviewed in the early days. We asked why he wanted to be a veterinarian. We usually get answers about loving animals and various things of that nature and some good reasons. But this fellow responded that he liked to hunt and fish and one of his professors had told him that veterinarians do a lot of hunting and fishing and that was why he wanted to be a veterinarian. That one didn't make it.

While we are on the subject of students and student affairs--before I was dean, I was chairman of the student affairs committee for several years and we had various problems to handle. Some of them were not particularly difficult and some of them were.



One problem involved a student named Don Hudson in our first class. He was probably about a third year student then, at that point. (He's practiced in San Diego ever since he graduated.). We had a number of young faculty members at that time; one of them was Bill Mathey who worked with poultry diseases. Bill and Don were both people of principle and Don had been through the military and had a lot of experience and was quite mature. Bill, perhaps, was not quite as old as Don (they were pretty close to the same age) and Bill felt the responsibility of his early teaching assignment. He felt that he must uphold his professorial prerogatives, I guess.

There was a little incident, the details of which I've forgotten. Dr. Mathey thought that Don Hudson was a little bit arrogant because Don didn't treat him with the proper respect that a professor should be accorded. He threatened Don with failure or something or other and wasn't going to let him back in the class until he apologized.

Don was just not about to apologize and Bill was not about to let him in the class, until he did. So it was brought to Dean Hart's attention and he said, "Well, that's a proper matter for the student affairs committee," of which I was chairman. I was about the same age as Mathey and Hudson,

We arranged a meeting and Don and Bill were there and Dean Hart came in to watch and see what happened (he didn't participate). We talked back and forth but eventually I got them both to shake hands and each of them to give a half-hearted apology [laughter]--the crisis was over. Neither of them wanted to apologize very much.

Then, a little bit later, in the spring of '53 this must have been, we had another interesting case. This was a student who at that time was probably about in the third year. His wife worked in the registrar's office and the registrar was moving some old records, (The student and his wife, by the way, had gone to Colorado State University and he had taken his pre-vet at Colorado State. Both of them were California residents; he had applied here and at Colorado and been accepted at both places on the strength of his Colorado records.) Well, in moving some of these old records (these were records from back before World War II), the wife came across a familiar name--somebody with the same name as her husband. She was curious, of course, and she opened up the folder and looked in and she could hardly believe her eyes.

Apparently it was her husband's record. She went home and told him about it and he admitted that he had been enrolled here before the war, but he had a very poor record. He had come to the conclusion that if he wanted to get into veterinary school he'd best forget about that record and just start over a gain-which he had done at Colorado.



Then, when he was accepted at both places, he was a little bit afraid to come back to California, afraid that his old record might be discovered and cause him a problem. He was a little ashamed, too of what he had done and he didn't feel right about it. But she wanted to come back to California, being a California girl. He didn't have any obvious reason for not doing it so they came back to California.

Well, their next question was, "What do we do now?" and they figured the best thing to do was just to go tell somebody about it. That was referred to our student affairs committee--what to do about this fellow who hadn't presented all his academic records at the time he applied to veterinary school. I was not on the committee at the time. The committee recommended that the student be dismissed from school, kicked out of veterinary school.

*And he was in his third year?*

Something like that. He was doing very well--a real nice, likable fellow. That didn't seem quite just to me. The whole thing had happened a long time ago when he was young, and he'd put in several years as a soldier, risked his life for his country and had done very well when he'd come back. I objected to the decision and I went in to see the dean. The dean felt the only thing he could do was go with the recommendation of the committee.

*In what capacity did you object to this?*

Just as a faculty member. The dean said--it was Dean Hart, of course--that we'd have a faculty meeting and decide it there. So I prepared my arguments as best I could. At the faculty meeting the chairman presented the committee arguments and we had a long meeting with a lot of talking back and forth. We finally came to a vote and they reversed the decision of the student affairs committee and the student was permitted to stay and graduate. Of course, he's been in practice ever since.

But the student affairs committee does have some difficult problems to deal with since they're dealing with academic matters, inadequate academic work, discipline problems, and such.

We also had a senior student who got good grades, especially during the first two years. When he got into his third and fourth year where he was working in the clinics and doing more practical things, his grades began to fall. When he got into the surgery



clinics, he failed. I was told, as dean, that he simply could not grasp a practical situation. If you asked him to give you the signs of distemper in a dog he could tell you all about it--he'll describe how the dog looks and how it acts, history and so on. But if he sees a case, he won't have the foggiest idea what it is. One instructor said he could look outside and not even know it was raining (which was probably an exaggeration).

We recommended, in his case, that he should drop out and that he get a little psychological counseling. We thought maybe he could get some fairly good counseling because his father was a counselor and he might have an idea of where to take him.

Then he came back in the fall, and the same thing happened all over again, or it was about to happen (the quarter wasn't over yet and they told me that if things were any different, they were worse). So I knew we were probably going to have to consider dismissing him for good. This particular student was caught stealing some books from the bookstore and with that he was out.

*It made the decision a little easier.*

Both as chairman of the student affairs committee and later as dean, I enjoyed working with the students a great deal for the most part. I had a lot of contact with them and I enjoyed it.

The past few years as graduate advisor my contact has been with the graduate students. I've enjoyed that a great deal, but I don't know the Veterinary students so well, except for a few.

There are other unpleasant aspects of administration, particularly as dean. Some of the students have very real and very serious problems. We had a number of suicide threats while I was dean (I've been wakened at two o'clock in the morning to talk to them).

One boy left a suicide note and took a gun and we couldn't find him for a long time. When he came back I had to deal with him and decide what to do. I took him under my wing a little bit. As far as I know, that was the last of any problems like that and I've seen him since a number of times and he's done very well in responsible positions.

We had another student who took an overdose of nembital and got into his car and started towards Sacramento and drove off the causeway. The fall almost killed him, and I guess the drugs did too, but he survived.



*Was that an actual suicide attempt?*

Yes. He's been in practice now for a good many years (close to twenty, I guess).

There's another interesting little story, not a suicide thing, but it has to do with dealing with students. We admitted a student who was a good zoologist and very much interested in bats. In fact, when we admitted him he was up in Alaska on some kind of a zoological assignment. While he was in veterinary school he worked with Dr. Enright who was working on bat rabies. The student was a very valuable student employee for Dr. Enright because he knew all about bats and how to handle them and where to find them. He'd go find them, trap them and feed them. He was very helpful.

By and large he was a pretty good student, but he was a bit selective. He was better in areas he was really interested in than areas that he didn't care so much about. He didn't care much about clinics in general and large animal clinics in particular.

Dr. Wheat had some standards that he liked to see the students live up to and he decided that this particular student during the spring of his senior year just didn't quite pass muster, in terms of interest and endeavor in large animal surgery clinics. This fellow had a job with the United States Public Health Service, after he graduated, to do work on bat rabies. When his grades came out, he didn't graduate and he was terribly upset. He came into my office and said he was packing up, going home and was never going to get a veterinary degree--this had washed up his career; the Public Health Service wouldn't have him now.

So we agreed that if he would come back for six weeks and repeat the work in large animal clinics, if it was done satisfactorily he would get his degree. But, no sir, there was no point in doing that. His career was ruined! The Public Health Service wouldn't have him. Well, I tried to explain to him that the Public Health Service wasn't the least bit interested in whether he knew about lameness in horses. They wanted him because of his knowledge about virology and rabies and epidemiology and bats and all that sort of thing: pathology.

After the session in the office he was still determined to leave, so that evening I went to his apartment in Aggie Villa. He was getting all packed up and ready to go. His wife was there. So I had another long talk with him and I argued and pleaded.



I don't know what all we did, but the upshot of it was that he finally decided that he would come back and put in that six weeks and get his degree. Of course the job with the Public Health Service was still waiting for him and he did a tremendous job for them (and he still does for that matter).

So these problems come along, and some of them do not work out well--that is true. Since I left the dean's office there have been one or more suicides. But most of the time you get the satisfaction of seeing the problems resolved and the students turning out well in their profession.

I remember another student who was having some grade point difficulties and I had him on probation. He got in an argument with his landlord and this bothered him terribly. He was spending all of his time thinking about how he was going to get the best of his landlord, and how he was going to stand up for his rights.

I tried to tell him that really this wasn't too important in the long run, "Why don't you just concentrate on your studies, bring your grade point average up and graduate from this place, and not worry about your landlord?" I failed with that student. He continued to give too much time to this conflict with his landlord and he went down in grade points again and that was the end of his veterinary career. Unfortunately he had some wrong priorities.

I remember another student . . . the student affairs committee at one time thought I was too lenient with respect to the students who had grade point difficulty. So one quarter, after I had been criticized for being too lenient, I just followed the book, so to speak, in sending out a notice of suspension according to our bylaws. A very fine boy, apparently not the best student because he qualified to be suspended, but eligible for readmission under conditions, got that notice and he did attempt a suicide. He wasn't successful, but he kind of messed things up. That taught me that I was probably right in going pretty easy with these fellows, particularly at first. They had to know they could have another chance. Of course, the time comes when, if they really do fail, you have to say no to them.

*By then you feel you've exhausted all the other possibilities?*

Yes, but not too quickly. And, of course, I've had that same philosophy as graduate advisor. There have been some very fine people who initially get into academic difficulty. My general policy has been, "Let's help them ride it out unless they show definitely that they are just not going to make it." Then, of course they have to go, but they certainly deserve a second chance. Most of them make it.



I think the incident that I just mentioned is really the only student affairs situation whose handling I really regretted. I'm sure there have been others that maybe I thought should have been handled in a different way but they were relatively minor.

### Other Committee Activities

*When you think back on all of your many committee assignments both within the school and campus-wide, and professionally--which ones have given you the most pleasure?*

Well, I think I must have been known as a good committeeman; otherwise I wouldn't have been placed on all these committees. I thoroughly enjoyed such assignments as the committee on committees. That was the first top committee that I served on (that was in '52).

I got elected to that committee by more votes than any other candidate. I enjoyed that and I learned quite a bit about the functioning of the University and the faculty system. I got a ringside seat on some of the intricacies and problems that were coming up within the faculty.

*Were you also able to foster a better understanding on the part of campus committeemen, on what the School of Veterinary Medicine was all about?*

Oh yes. In meeting with the people from other disciplines on unrelated matters and sometimes matters related to the veterinary school, you inevitably pick up attitudes toward the school--what they expect and what they think of various people and so on. The more you mingle with other people, the more you learn about yourself and about the things that you are associated with (as well as the things that they are associated with).

The committee to pick a new librarian--I enjoyed that experience. Herb Young of chemistry and Celeste Wright and I and I think perhaps one other person were on that committee. We apparently picked a pretty good man; J. Richard Blanchard did a good job.

I have generally enjoyed most of my committee assignments. I've enjoyed being on the statewide representative assembly, and our own academic council. When I came back from my sabbatical at Cornell I was asked to be chairman of the faculty if I were elected,



and I was elected in 1969 and 1970. I enjoyed that assignment very much. Interestingly enough, I was asked because the faculty were pretty evenly divided on some matters. Somebody thought I would be acceptable to both sides and perhaps would be helpful in seeing an issue through to a conclusion. And it worked out that way.

I was a member of and then chairman for quite a number of years of the building and street names committee. That was an interesting assignment. Our committee was quite active during those years and, actually, I was in on the naming of maybe something like half of the buildings and streets on the campus. It was interesting too, that this was purely an advisory committee and the chancellor, no matter who he might be, was always very independent insofar as taking our advice was concerned. He did not always take our advice. He named some buildings as he wanted, specifically against our advice and he failed to name some others in spite of our advice. He had his own pressures. He had pressures of Regents and he had pressures of alumni.

By and large though, our advice tended to be followed. I learned certain things about the history of the campus and of departments and things that are going on that I would not otherwise have known anything about.

The only real disappointment in serving on that committee was the failure to get the Animal Science Building named for Dr. Hart. We tried several different times, several different years, but we always ran into the opposition from the Department of Animal Science and it never went through.

Of course appointment and promotion committees were often interesting and sometimes difficult, though usually not. I enjoyed being chairman of appointment committees for very key faculty in the new medical school in Davis.

### Dean of the School of Veterinary Medicine

*As background, I'm using the excellent short history of the School of Veterinary Medicine which you wrote in the mid-sixties. That history, in naming the advisory committee people, says that Schalm, McKercher, Peoples, Enright, Beach, Cameron, and Traum were on either the executive or the advisory committees which were advising Dean Hart. Were you on any of these committees?*



Well, that was the initial advisory committee that you're speaking of there. Shortly thereafter the admissions committee was formed in the spring of '48. I was on that, of course, and the curriculum committee was formed at about that time and I was on that committee. Then after the school got under way, the student affairs committee, on which I served, was founded. Those were the main committees.

Another one, I believe, was referred to sometimes as the budget committee. Dr. Hart met with them fairly regularly and they talked about all kinds of things.

*Now that's the budget advisory committee whose names I've just listed?*

Yes. I am not sure which way the advice flowed most of the time. I'm sure some went both directions.

*Well, then, Dean Hart told Dean Hutchison that he wanted to retire. I suppose that, as is normal, a search committee was set up, probably by Dr. Hutchison?*

The first announcement of his intention to retire was about 1952, I believe. I don't think that was particularly widespread information--I'm not sure that I knew at the time. Maybe some of the others did or perhaps Dean Hart himself mentioned it after he secured the appointment of Dr. Schalm as assistant dean. That may have been part of the whole plan, I don't know, to get Dean Hutchison to appoint Dr. Schalm as assistant dean.

The expectation of Dr. Hart was that Dr. Schalm would succeed him as dean. This was, well, sometimes even mentioned as "when Dr. Schalm becomes dean," or words to that effect. It was clearly the intention of Dr. Hart to put Dr. Schalm in a position to become dean when he retired, and also to secure some assistance in the operation of the dean's office. I think the main function of Dr. Schalm during that time was to act as dean when Dr. Hart was away. In terms of a division of responsibilities and that sort of an arrangement, I don't think there was very much.

The general procedure in appointing a dean is to appoint a search committee, of course. In all probability, Provost Freeborn discussed the matter with Hutchison. He certainly would discuss the committee recommendations with him and any final decisions with him--there's no question about that. And of course, it would go to President Sproul. But then we're getting into areas that I don't know much about.



*Do you recall who was on that search committee? I was told that the chairman was Jim Wilson. Were you on that committee?*

I was on it, yes. Jim Wilson was the chairman and Don Cordy was on the committee. Let's see, I haven't thought about this for a long, long time. There had to be a couple more.

*Were you rather surprised when you were invited to become the dean?*

Well, yes, I was very much surprised. It seemed most unlikely, and the committee, as most committees of that type do, wrote to a large number of other deans for their suggestions and they wrote elsewhere. They received suggestions from the faculty; Jim Wilson, in particular, as chairman, had talked to a lot of the faculty. And of course the prime candidate was Dr. Schalm. He was generally well liked by the faculty, but he didn't have any real support other than Dr. Hart. And, of course, Dr. Haring had that in mind years ago, but he was no longer living.

Personally, I didn't oppose Dr. Schalm. I felt there were some good reasons to make him dean. But, knowing that quite a number of the faculty had strong opinions to the contrary, it just didn't seem appropriate. I guess I never thoroughly understood why some of the opposition was as strong as it was, but those things happen.

Dr. Cameron was very strongly opposed to Dr. Schalm. Of course, Dr. Schalm knew that and everybody else did too. I think that opposition probably strengthened the feeling in other people's minds. And, of course, Cameron was a good friend of Jim Wilson, the provost and other people on campus (other old-timers on the campus), so that opposition was very well known.

I suspect that Dr. Cameron himself would have welcomed the job, although he didn't openly campaign for it. I think he realized that it was most unlikely because there also would have been very strong opposition to him. I guess he was reasonably content to see someone else get the job.

Dr. Hart was probably surprised and disappointed that Dr. Schalm wasn't selected. Dr. Schalm, himself, I am sure was quite disappointed; undoubtedly it was a little embarrassing to have been placed in the position of heir apparent and then not be selected. But Dr. Schalm was very much a gentleman about the whole thing and he tried to cooperate with me as much as he could. He insisted, to the provost, that he be the one to announce it to the faculty, which he did in a very nice way at a meeting of the faculty.



*He was retained by you as associate dean, I believe.*

Yes, he was. Dr. Hart, at the time the announcement was made (February, 1954) had had a small heart attack and he was spending most of his time at home. For something like a month prior to that time Dr. Schalm had been acting dean--Dr. Hart would come up occasionally.

When my appointment was announced, although it was not effective until the following July, I immediately became acting dean. Dr. Hart was really not acting as dean except in a few matters; I think he signed the budget that we prepared and he signed the diplomas and was present at the graduation that year. He took care of some of those things. But, in effect, I became acting dean as of that moment.

*What was your family's reaction?*

I had a wife and a son at that time (our daughter wasn't born yet). My wife was always very supportive of me in anything that I undertook, so she accepted this with mixed feelings and I did too--with perhaps some apprehension that it would lead to problems and more work and so on. But she was always supportive of me if I was doing something that I had to or wanted to do, although she was never ambitious that I have job like that. It was, "Well, if you want to do it, I'll help you the best I can, but if you don't want to, don't think you have to do it for me because I don't care." That was her attitude.

## **The Developing School: 1954-1962**

*In general, when you took over the office of dean following Dr. Hart, what did you find the situation to be?*

I think I pointed out in my short history that the school was operating on a shoestring as far as the budget was concerned. We had brought in a number of new faculty members and the ones that were already present had their activities changed from what was veterinary research to primarily teaching. Most of the faculty had a very heavy teaching load and practically all of the budget which had been research budget was now used for teaching. We were faced with the necessity at once of enlarging further our teaching faculty, providing support for teaching, and providing support for research.



This was quite a task. The pattern had been set for the veterinary school to use an austerity budget and we had to break out of this mold. The university administration was not totally sympathetic and many of the important people on campus and in agriculture were not sympathetic at all. They were a bit jealous of the big building and a bit alarmed at the number of new faculty that were coming in. And they did not understand veterinary medicine. They had really no understanding of the needs of the school. So, we met quite a bit of opposition.

On the other hand, our people in the faculty felt the need very urgently to reduce teaching loads somewhat and to get the money to teach as they felt they should, to develop a research program and to rebuild research programs for those who had their funds and time diverted to the teaching program. So, that was the first priority. Actually, if we look at the record (it's laid out in my short history) over the years, we were fairly successful. But it was difficult. It was kind of a pressure job.

We had to get some animal facilities for research animals and research on diseases and so on. One of the things that surprised me most at the outset was the opposition on the campus towards getting any experimental animal housing. We were denied several years in a row and finally the provost agreed that he would provide minor capital improvement funds (about \$50,000 per year) for us to start building our animal resources.

That was a great help and we did a great deal with it, but it wasn't nearly enough. I was really quite surprised at the attitude of the building and campus development committee, I think that's what it was called, under the chairmanship of Luther Davis at the time.

I had worked with Luther Davis on some other committees and we got along very well. I felt that I should go to him and try to explain what our needs were and I did so. And I invited him to come out to see what we had and what we needed, because the recommendations of the committee carried a tremendous amount of weight.

To my amazement he utterly refused. He didn't want to look at our building needs or even to hear about them. He just refused and said, "Well, we've considered that and we've made our minds up." Just like that.

*According to your history, about this time you had some NIH funds, I think, that you had secured.*



Well, this came right at the last couple of years of my tenure.

*I see. Is that when you built that lab animal housing?*

About when it got under way. Actually, we got the grant during my tenure, but it was not built until later.

Chancellor Freeborn was even opposed to our applying for NIH money, but when Emil Mrak became chancellor he had a different attitude toward these funds and he said we should apply by all means. And we got a very substantial grant and our animal building program then really got under way.

*Your history mentions that Dr. Hart had hired thirty-two faculty and twelve of them stayed just a relatively short while. But twenty of them were here and those were the new people whom you have referred to. Your history says that Dr. Hart had diverted research funds to support teaching, as you've already pointed out; that research technicians were helping to conduct teaching labs that the support per-man was less than elsewhere in the College of Agriculture and the clerical staff themselves were typing lab and teaching texts, so that apparently the emphasis had indeed gone to teaching instead of research.*

*The history also brings out, as you already have, the fact the campus administration and important committees thought that the School of Veterinary Medicine was a "fat cat" and had about all it was going to get. Were you able to do anything to break this campus feeling down?*

Yes. We had the most problems with that during the first four years of my eight years as dean (the last four years it began to break down under both chancellors). Chancellor Mrak had a different attitude--he wanted to build up every facet of the campus including the School of Veterinary Medicine. Under Chancellor Freeborn too, the latter years were better than the first few.

*Was this because of any specific thing that you had done or was it just because they were getting more mellow?*

Well, I think it would be difficult to describe all of the reasons, but I think our needs became more obvious and, of course, the fact that I was continually presenting them I hope had some impact (and I think it did). Not all the decisions were made on the campus.



They were made in Vice President Wellman's office in Berkeley. I saw Wellman frequently so he was well informed about our needs. I'm sure that he also was very important in increasing the funding to the veterinary school.

Of course he was important for the whole Davis campus. And it was a very complicated thing between the vice president of agriculture and the chancellor and the director of the experiment station.

*Now Hutchison had retired at this particular time?*

Yes, Hutchison retired, well, actually in 1954, as I recall, and Dr. Wellman came into his position. I didn't serve as dean under Hutchison. I guess Wellman and I came into office at about the same time.

### Departmentalization

*Your history points out that by 1958, when you again asked Chancellor Freeborn for official departmentalization, Vice President Wellman had recommended it.*

Wellman and I had talked it over before and he urged me, "Well, go ahead and recommend it." I did so and Freeborn forwarded the recommendation. He did not object at this point and he was ready to go along with it. But he had objected when I first proposed it.

The big holdup at that time was in President Sproul's office. His office of the budget made a great many decisions and they objected. And one of their people came up to talk to me. He argue that I could better administer the affairs of the veterinary school if it were maintained is a single department and that was its status. It was the School of Veterinary Medicine and it was the Department of Veterinary Science. I was dean of the school and chairman of the department, and assistant director of the experiment station. Official departmentalization was held up there for a couple of years right in the budget office.



*When Emil Mrak became chancellor and he approved it, was the budget office then more amenable to approving the official departmentalization? Or was it because Chancellor Mrak had, actually, more power to make these kinds of decisions than Chancellor Freeborn?*

I think Chancellor Mrak had more enthusiasm for it, and he probably had more power. And, I think the president's office underwent some changes at that time too; so I think there are a number of factors all involved there. Probably Emil said, "Well, we've been sitting on this long enough, let's move."

*Well, finally, after a long, long fight--I don't know how many time the record shows that you and your committees had submitted requests for official departmentalization--it was approved in 1960-61. It went from one large department, then, to eight academic departments and a service department?*

Yes

*What were those original official departments?*

Well, let's see if I can remember them all. There was anatomy . . .

*And can you remember the department heads at the same time?*

They're all listed in that little history there. There was anatomy and Dr. Julian would have been the department chairman then. There was pathology and Dr. Cordy. There was microbiology and Dr. Douglas; clinical sciences and Dr. Kendrick; pharmacology, physiology and biochemistry with Dr. Peoples (and then we shortly changed that to physiological sciences). There was public health under Dr. Sadler; clinical pathology under Dr. Schalm and avian medicine under Dr. Raggi.

*Your history mentions that Dean Hart was in pretty tight control of all of the major decisions.*



Well, there isn't any question about that!

*Did you loosen the reins and permit fuller development of individual initiative?*

Although we were unable to establish official departments, we established--right away--unofficial areas; individuals were assigned to function as departmental area Leaders. We even called them chairmen even though they were not officially chairmen. Eventually I had to assume the official prerogatives of the chairmen myself.

Nevertheless, we did divide up into departmental areas and we had these departmental leaders, so in many respects we functioned pretty much as departments even though it was not official.

*Who were those departmental leaders, do you recall?*

They were pretty much as I already named them as our first departmental chairman.

*In other words, the official department chairmen followed pretty closely on the unofficial department heads?*

Yes. There were a few changes. Dr. Bankowsky was the departmental leader in the area of avian medicine or poultry pathology for a number of years. Dr. McKercher was the departmental leader for microbiology for a number of years. Dr. Christensen was the departmental leader in the area of clinics for about seven years.

*Was that medicine, surgery and clinics?*

Right. Later called clinical sciences. I believe all the others were the same.

### **Clinical Pathology**

*Clinical pathology as a separate department, I think, was historic because Davis had the only School of Veterinary Medicine in which clinical pathology was a separate department.*



Yes, that is true,

*Was consideration ever given to putting it back within the department which was then called medicine, surgery and clinics?*

Undoubtedly there was some discussion that this function should be associated either with medicine, surgery and clinics, or with pathology. In medical schools we found the activity sometimes in one place and sometimes in the other place.

I felt very strongly and personally, as did Dr. Schalm, that it would thrive best as a separate department. The problem had been, in many medical schools and certainly in the other veterinary schools, that this activity being associated with one of the other departments was relegated to the position of being somewhat of a stepchild, and was not encouraged as a discipline of its own. Of course, it is not a single discipline; it involves many disciplines, but nevertheless as an activity it still was not encouraged.

Hematology, for example, in many of the other situations really had no opportunity to develop. We felt (certainly I felt along with Dr. Schalm and some others) that we wanted to develop this area in our veterinary school and that it would flourish best on its own two feet.

I think that history has borne out that this was a very wise decision. We've undoubtedly developed the most outstanding hematology program of any veterinary school. Dr. Schalm has written his hematology book, now in its third edition. It's really the only good veterinary hematology book in the world. Dr. Schalm also wrote a book on bovine mastitis. Kaneko and Cornelius have published a two-volume book in clinical biochemistry and it's gone through its second edition--another very notable contribution. So we've had three outstanding text books from this very small department and an outstanding research record from all its members.

We brought in Dr. [Charles E.] Cornelius for his graduate work, and he later became an outstanding member of the department. Then he went on to become dean of a couple of other veterinary schools.

*He's now dean at the University of Florida?*



He's now dean at Florida. He first went to Kansas as dean.

We've also had quite a number of awards: research awards and teaching awards and that sort of thing in the department, so it has done its job. Whether it should be maintained as a separate department indefinitely. I suppose is another question. The general area of clinical pathology has proved itself, and is accepted and regarded as necessary. Where it is not a separate department, its disciplines are flourishing in other departments: hematology is either in medicine or pathology, clinical microbiology in a department of microbiology. In fact, our department of microbiology has taken over the clinical microbiology function and they are doing an outstanding job of it, so I don't know that it's as important to maintain a [separate] department now that the importance of the disciplines and activities have been so well demonstrated. But I think it was important then.

### Decision Making

*Did you have your own executive committee?*

The group of area leaders made up my executive committee. We met as a rule, once a week. During this time, also, the faculty had its faculty organization executive committee and the chairman met with us, and occasionally other people as might be needed.

*Did Dr. Schalm as associate dean have any special duties?*

For the most part, no. One reason for this was that he had very heavy teaching and research responsibilities. He carried them out very, very well, and of course his other responsibilities too as department leader and eventually department chairman. So he functioned really very much as he did for Dr. Hart: he functioned in my absence, he took on some special assignments, he did some special work in the area of student activities but not a great deal.

### Budgets and Grants

*What was the largest printed budget under your jurisdiction? Was it the veterinary clinic?*



As far as departmental areas are concerned, I am sure it was.

*What other ones were there?*

Each of these areas after departmentalization would have had a printed budget. Now before departmentalization they did not. We divided the budget up internally and we kept some internal books. We assigned so much to each departmental area and I assigned so much for administration. And I kept some funds that we simply called the dean's reserve (we held back some funds to meet unexpected expenses). Then, along about this time of year (in March), if it looked like we were going to get through the year satisfactorily we would decide what needs could be met with the reserve, and it might help out in certain departments or maybe we needed it to buy a piece of equipment for teaching or research or whatever.

*The budget figures that are listed in the short history shows that from 1954, when you became dean, to 1961-1962, when your tenure ended as dean, the total budget went from \$533,000 (approximately) to over \$1 Million. The total staff rose from 83 to 126; your support budget increased from \$82,000 to \$213,000; research support per faculty member increased from \$760 to over \$2,000, and the total support per faculty member jumped from \$2,220 to \$4,130. Grants rose from \$218,000 to nearly \$2 million of which research received \$887,000. There was an AEC construction fund of \$256,000 and an NIH construction fund of \$772,000. Research publications jumped from a figure of 47 to-- I've got two figures, one is 125 and the other is 200 in 1960-61, either one of them would be a very whopping increase.*

*I thought that you might want to discuss each area. What did you do to nearly double the state budget. Was it because the times were good and tax money was a little more free, and research money was coming in more abundance? Or was it something specific that you were able to do?*

With respect to the state budget, I think it was primarily a matter of continually making the needs known and asking for the money and being reasonably successful at it. It wasn't anything dramatic. I was just constantly working at it and apparently convincing the chancellor and the president that our needs were genuine and apparently satisfying them reasonably well that we were making wise use of the increases that we got year by year.



Of course, as we discussed earlier, we started out at a very low level of research support for faculty, but the level was also low for teaching support and both had to be increased. We about doubled the teaching support and the research support went up almost three times.

With respect to the grants, that partly reflects the times because the NIH construction grants were not available at the time I became dean. Of course, the NIH construction grant--we've discussed the background of that already. Emil Mrak was interested in it, so we went ahead and this was the start of quite a bit of NIH construction money.

AEC construction grants were also available and Dr. Hart had received one of these in starting the project in radiobiology with Dr. Anderson. We enlarged this project very substantially toward the end of my tenure as dean, which accounts for the AEC construction grant in that year and some previous years.

*Was there opposition to the AEC grant on campus in general?*

There was some opposition to our project within the veterinary school and I suppose there was some on campus too but it was not particularly called to our attention. There were some in the veterinary school who thought that we should not have gotten into this atomic energy project to begin with; they opposed it when Dr. Hart went into it.

*What was the basis of the opposition? Why did they feel that way?*

I don't really understand that either. I guess they thought it was a bit divergent from the central thrust of veterinary medicine and it might divert energy and funds and maybe people from other things more central to veterinary medicine. Generally speaking, for a project of that kind, my personal appraisal is that it went very well as it got under way. It was under close scrutiny at all times from the top level committee of scientists, atomic and radiobiology scientists from all over the United States and the Atomic Energy Commission.

There was some feeling that the project was really of no specific value to the school or the campus in terms of making resources available to other people, or bringing other people into the project as co-investigators and things of that nature. And I suppose, to some extent, there was some justification for these complaints-- certainly it did not apply directly to some of the problems in farm livestock, for example. But on the other hand, veterinary medicine had the background to undertake a project of this kind, probably more than any other discipline. And I think it was right for them to seek out a veterinary school to undertake it.



Furthermore, it has had over the years, I think, a significant impact on the training and the research in the veterinary school. We had a core of research workers in the area of radiobiology, particularly Max Kleiber and his tracer team, and this brought a different dimension and different talents into the area of radiobiology on the campus.

Particularly in the last ten years I think we've had a real harvest of contributions from this project to the campus as a whole and certainly to the total knowledge in the field of radiobiology, both from the standpoint of its hazards and its use in biology and medicine. During the latter part of my tenure, the Atomic Energy Commission asked us if we would enlarge our project. We did, to about three times its original, concept. We brought in more science and we built very fine laboratories, tremendous laboratories and some very fine dog handling facilities which have been a model for handling beagles throughout the world.

I think probably the project in time outgrew the background and major interests of Dr. Anderson, its original director, and even while I was dean there were some who felt he should be replaced as director. I had a couple of people in mind who might replace him if the opportunity to do so came along. Sometimes you can recognize that maybe certain steps might be advantageous but the time is not right, and you simply await the right circumstances. It so happens that Dr. Bustad was one of the people that I had in mind; and, of course, two or three years later he was brought on board as director of this laboratory. While Dr. Bustad was here the activities in the laboratory and the contributions expanded considerably.

*Then it was a pretty important stepping stone for Dr. Bustad himself, was it not?*

Yes, it undoubtedly was.

*Where is he now?*

Dean of veterinary medicine at Washington State University. I was there last fall to visit him and he's doing a tremendous job.

*Dr. Jasper, we have covered in general terms the growth of the School of Veterinary Medicine from 1948 to 1962 in terms of the budget which is outlined on page forty-two of your own short history. I wonder now if you would discuss in more detail what went into these increases during your years as dean.*



When I became dean, the budget was still one large department budget and it was administered very largely centrally by Dr. Hart himself. This was such a large complicated department in essence (and in fact a school by that time) that we had to break it down into more manageable units for planning and for control of the expenditures.

We have already discussed that we did break it down into unofficial departmental areas with people assigned to responsibilities as department chairmen. So the proposed budgets were prepared by these unofficial departmental units, and then they were presented to me and I used their requests as a basis for putting together an overall budget request which would be presented to the provost.

We would get back to us an overall budget (always less than we had proposed, of course), and then it would be my responsibility to break the funding down again into the departmental areas. In this process, when the proposed budgets were put together in an overall budget, I would discuss that with our executive committee, or budget, or administrative committee, and reach a reasonable accord and send it in. When it came back there would be more discussion with the assembled group of department chairmen.

In terms of research, the record indicates that at the beginning we had slightly over fifty dollars a month for faculty members for research. It did not have the priority overriding our teaching responsibilities, but it meant in the budget process that in some years we held back our increases for teaching expenses more than we would have liked in order to provide a bit more for research.

Over those eight years we increased the support of research almost three times per faculty member--about two and a half times or a little better, per faculty member. The support for research was needed both for equipment and supplies, and also for technicians and personnel. We just gradually increased in each of these areas trying to meet, as nearly as we could determine, the most urgent needs first.

## Clinicians

*I imagine that one of the urgent needs was to strengthen medicine, surgery and clinics, was it not?*



That was a first priority, both in the area of teaching and in the area of research. They were the last area to be developed and they carried a major part of the teaching load and an increasingly, and very necessary, large clinical practice to serve as a background for teaching the clinical subjects. That was the first priority, there's no question about that.

*Had there been a problem with the clinicians in terms of research productivity?*

We had some problems, some of which were, I think, justified. For example, in bringing in a number of young clinicians we inevitably got some who had very little potential or interest in doing creditable clinical research. They may have been fairly good at doing the day's work on the patients, but they were essentially working clinicians rather than, shall we say, academic clinicians who not only were working but who were pushing into new solutions of problems.

In terms of criteria for advancement of clinical people we really didn't mind and sometimes it was helpful to have a rigid budget committee review and maybe rejection of some of these people who were not fundamentally interested in academic clinical medicine and surgery. But there were times when the committee was really too severe.

When we did have some problems with promotion of some very good people; one reason for the problem was what we were talking about before: that they were terribly overloaded with work and that any research that they did had to be nights and weekends only or vacation time. Well, that just wasn't fair. So, one approach to solving that problem simply was getting more people aboard to do the work and the teaching that had to be done.

The other approach to the problem was a rewriting of the guidelines for evaluation for promotion of clinical personnel. We rewrote the guidelines to provide credit for essentially clinical type research: well-documented explorations of outbreaks of disease, shall we say; a recording of some new and better ways of solving the problem; development of new surgical techniques; astute observations on uncommon or rare disease, and things of that nature that gave evidence that these people were really on top of their job and progressing.

This rewriting of the definition of the criteria for promotion was presented, of course, through the chancellor--the provost at that time--to the budget committee and the budget committee accepted it essentially without change. That was a great help.



We still have those guidelines; they've been modified somewhat I'm sure, but the idea is the same. I wrote them in conjunction primarily with Dr. Christensen who was director of medicine, surgery and clinics at that time. They were reviewed by our administrative committee in the veterinary school. I've really forgotten whether we sent them to certain other committees within the school or not, but certainly they were well reviewed within the school, and agreed upon. And then we sent them on to the provost.

*Isn't there a special difficulty in giving credit for teaching on the part of clinicians insofar as faculty class contact hours is concerned?*

That was another aspect of the problem. Possibly this had been done by other people, but I didn't know it at the time. I actually developed the concept of presenting the workload in terms of faculty contact time, because in the clinical area we had people working with small groups of students over long periods of time. Simply multiplying students by units, or something of that nature, just didn't give an adequate picture at all and we were caught in this trap.

I went to great lengths then to actually show the contact time in classes that these people were spending. It was really quite a revelation to people on the budget committee and so on--they just didn't understand that at all.

## Recruitment of Faculty and Staff

*In increasing staff as you did--faculty and support staff--did you have any conscious recruitment program or policy?*

I suppose in general it would be what anybody's policy would be: get the best person you can for the job to be filled.

*And how did you do that?*

I suppose about the same way we do now: if we had a job we would mostly advertise by letter and word of mouth to the other veterinary schools that were graduating graduate students, or at times we would be after maybe a higher level person who was further along. That was always very difficult to do, and it didn't happen very often.



In those days we did very little advertising in the journals although that's very common now.

*For high level personnel?*

For any level personnel, beginning with assistant professors or even graduate students sometimes. But we didn't advertise in the journals then. My first acquisition was actually Dr. Cello. He came here from Cornell for a year after he graduated and in my estimation he did a very fine job. But he had too many ideas of his own to suit Dr. Hart and they had a very clear falling out.

I hadn't forgotten Dr. Cello. In fact, he knew when he left that I was sorry to see him go and he let me know that under the right circumstances he might consider coming back. So, shortly after my deanship was announced I stopped by to see Dr. Cello who was in practice in Santa Rosa. I asked him if he would be interested and willing to come back and he was. I instituted appointment recommendations and he was the first person whom I actually hired. The person in charge of the small animal work at that particular time was, in my opinion, and I think in the opinion of most people, not absolutely the best suited for the position. He was called into the military service and so it was not necessary for me to take any particular kind of action in his case. I did make it clear to the provost that we did not want this fellow to return and the provost assured him that we were not able to hold the place open for him. So that took care of that particular thing and, of course, Dr. Cello has proved to be very good.

*I believe you already touched lightly on the AEC project 406 for which you were the co-director. I believe that in that project you brought two Ph.D.s in radiobiology to Davis during your deanship. Is there anything further along that line that should be discussed?*

Well, these are Dr. [Marvin] Goldman and Dr. Della Rosa. Dr. Della Rosa left the project a few years ago and I know absolutely nothing about those circumstances.

Dr. Goldman was an extremely competent person. I think both of them contributed substantially to the project, but Dr. Goldman in particular proved to be the type of person who can grow and develop and increase his competence in his special area of interest, and also grow in breadth and general understanding and ability as well. You'll probably interview him, but as you know he was awarded (about three years ago) an award of great distinction by the Atomic Energy Commission. They very much wanted to keep him, but he chose to return to Davis.



When Dr. Bustad left to become dean at Washington State College, Dr. Goldman became the director. When you say I brought them in, it was really Dr. Anderson who located the individuals and proposed that they be brought in.

The Atomic Energy Commission required that I be listed as co-director in the sense that I had to co-direct the responsibility in submitting reports and plans and budgets and that sort of thing. But it was really Dr. Anderson who developed this and discussed it with me. Generally, I agreed with his analysis. I had very little in the way of day to day directorship responsibilities. I functioned with respect to Dr. Anderson as I did with the department chairmen. I was brought in in the case of special problems.

I do want to say that I have a great deal of respect for Dr. Anderson's vision and his operation of the project. Now I did say I felt that possibly the project outgrew Dr. Anderson and was perhaps ready for another director and I think that is essentially correct. But, its partly because Dr. Anderson was so successful in the job that he set out to do. He was very successful with the initial x-ray project and then they wanted him to take on the strontium 90 and radium and other things. It kept growing.

Dr. Anderson, I think, in many respects is a sort of a genius. He's highly intelligent and can pursue things in a great deal of detail. But I always felt there was a great deal of intuitiveness in his endeavors. I'd find sometimes that I would follow half a dozen steps in his thinking and all of a sudden we'd be over here. Dr. Anderson often amazed me. He's a man of many different abilities. He developed this very wonderful book on the ovary with Dr. Simpson down in Berkeley. He published it about a year and a half ago and it's really quite a monumental work on the ovary of the dog. He's widely knowledgeable in a great many different things. He has his pilot's license as a river and bay navigator. He used to pilot bay and river tug boats, He knew the Delta area and could wind around those islands with his eyes shut. He is a great bird lover; he had quite an aviary in his place, also different kinds of fish. He is an excellent dog trainer. He's one who can work eighteen hours a day year after year and get along on a few hours of sleep. He'll go to bed at two o'clock and be up at six.

*Was there much faculty turnover during your administration? You said that some of the people just didn't make it.*

Actually no, there was not. We had some very junior members come and go. We had a few who did not stay, I but I don't think we lost anybody of significance.



## Professional Relations

*Your history, on page thirty-nine, indicates that Dr. Hart's relations with the animal industry were mainly on a personal basis, not on an institutional one. Dr. Hart had a problem situation in poultry: Hinshaw had resigned, Dr. Beach was deceased, the veterinary profession seemed to be aloof to the school. What did you do to improve those public relations? Were you able to do so?*

I think I mentioned, actually at the top of that page, that Dr. Hart had made a special trip to Southern California in 1953 and I think that that was very useful insofar as the relations with the profession was concerned. Very probably the time of that trip marked perhaps the low point of relations with the veterinary medical profession.

One thing that he and I did, with respect to the veterinary profession, was to emphasize the mid-winter veterinary conference of the California Veterinary Medical Association which was held here at the school. First held here in Davis, as the meetings got larger we moved to Sacramento where we had better facilities: rooms for the members to stay, space for exhibitors and adequate meeting halls (because we no longer had adequate meeting halls here on the campus). These proved to be very successful and very popular conferences. Their success meant that ultimately the conference outgrew Davis and they eventually moved away from Sacramento to more suitable locations.

One of the problems with the Sacramento area was the fog and storms at that time of the year which made traveling difficult and hazardous either by air or by car. So they eventually voted to have their mid-winter meetings, in San Francisco or the Los Angeles area or San Diego or some place where the weather was more agreeable and dependable.

These were very successful conferences and went a long way in improving relationships between faculty and the profession. It provided an opportunity for us to get acquainted with each other. We've lost a little bit in the last ten or twelve years because there's not been as much opportunity for faculty-profession interaction. Even many of us who were active at that time are busy with our responsibilities and we don't get to the state meetings so much. We realize it, but it's hard to do too much about it. We can't go to all the meetings in the world.

I was fairly active in the state association affairs in various ways. I was on some of their committees and sometimes I met with the executive committee. I tried to attend all their major meetings and really got along with them quite well.



Just as important, and maybe more important, my personal overtures would have been a complete failure if I had not been backed up by the cooperation and performance of faculty members. A great many of them made every effort to improve relationships. This involved the clinic people who tried to make and maintain good relationships with referred patients and all that sort of thing. That was always somewhat of a problem for a great many reasons. And it's still a problem today, but they're still making a good effort.

Various faculty members were active in troubleshooting on problems that were encountered in the field, particularly in the livestock and the poultry areas, and this helped our relationship with both the industry and with the veterinarians that were out in the field.

In the livestock area, [Dr. Blaine] McGowan was very successful. In the field of sheep diseases, blue tongue in sheep had come along and made a terrific impact. McGowan and Dr. McKercher got on top of that disease.

*Dr. McGowan was the president of CVMA, was he not, last year?*

He just completed a term as president of the California Veterinary Medical Association.

*Is he the first member of the faculty who has had that position?*

Yes.

*So that indicates, certainly, the closeness of the relationship between faculty and the profession, does it not?*

Yes indeed it does. This is another thing which has changed tremendously since the early years of the school. Of course, the school had no alumni active in the profession at all for the first few years that the school was under way. The alumni were the very young people--the junior members of any association are young--and they were the ones who stayed home while the owner of the practice, or the boss, went to the meetings and got involved in association affairs and so on.



All of the leaders in the profession at that time were graduates of another school and they held basic loyalties to another school. The group from Colorado was especially strong in their loyalty to their alma mater. That was a little bit of a problem, shall we say, that we had to overcome because there was a lot of feeling that whatever a California school did, Colorado did it better. Sometimes, undoubtedly, that was true, but it wasn't true all the time. That was something we had to contend with in the early days that we don't have to contend with now.

If we look down the list of the leadership of the California Veterinary Medical Association and the leadership of the local veterinary medical associations over the past ten years and maybe especially over the past five years, it has been, to a major extent, made up of California graduates. The executive committee of the California Veterinary Medical Association, maybe a couple of years ago, was probably 70 to 80 per cent California graduates. I don't know whether it's that high right now, but it's certainly well over 50 percent.

So, that sort of a change in the leadership of the profession, undoubtedly, makes some, difference in the basic attitude toward the school, although I must say that we have never enjoyed quite the support from our alumni that Colorado has had from theirs. I don't know all the reasons for that but undoubtedly, they are very complex.

Support of the alma mater in general has not been as popular with recent generations of students as it was with your generation or mine. So, it's not unique to California, it's just a different age.

*This aloofness that your history referred to on the part of the profession to the school years ago--what was the basic cause of that?*

I think we've talked, first of all about part of the reason. They had all graduated from someplace else. They didn't know us and they didn't know what we were going to do or what impact we would have upon the profession in the state (whether we were going to graduate too many veterinarians or the wrong kind of veterinarians). Rumor was around that we were going to graduate a lot of hotshot scientists that would be inept in a practice. How it got started I really don't have too much idea, but that was something that Dr. Hart earlier realized that he was going to have to fight. And that's one of the reasons that he went to that Southern California meeting in 1953. That was an idea that he wanted to counteract. While he made no apologies for our emphasis on science in the curriculum and a good basic background, he did try to emphasize that we were going to try to develop very good practical people also.



I think maybe one reason for the rumor was that we were trying to get people with Ph.D. training (certainly at least master's degree training) in our clinical departments. We weren't going to have all our people that way, but we certainly wanted to have some of them that way. That hasn't changed over the years. We feel, I think, essentially the same about it today as we did twenty years ago.

## Relations with the Industry

*You mentioned the research work that Drs. McGowan and Mckercher had done for the industry during your deanship. Was the industry (the Wool Growers Association, California Cattlemen Association and so forth)--were they requesting additional research on field aspects of disease problems?*

Well, they requested help on specific problems that developed. I mentioned the sheep and blue tongue; when blue tongue hit the sheep industry, it hit it very hard. It was a strange new problem and they were of course very worried about it.

So, Dr. McKercher and Dr. McGowan went to work on it jointly. Dr. McKercher was a virologist and Dr. McGowan was a clinician. They made a good team and both contributed to the solution of the problem.

Dr. McGowan personally got along very well with the sheep men. He sold himself as an individual and as a veterinarian, "I'm on your side, and I have some abilities not only with respect to this strange new disease but with your older other problems such as foot rot and enterotoxemia and ketosis."

Dr. McKercher was a very excellent virologist and he was able to solve the virological aspects and to come up with a vaccine. That was very impressive to the wool and sheep industry. He also worked on parasites of sheep with the cooperation of Dr. Douglas and Dr. Baker, so all this meant the sheep industry now had confidence in the Veterinary school, But we had had to earn it. Up to that time the industry knew Dr. Hart in long years of association, but they didn't know any of the new people, who had to prove themselves.

The cattle industry was hit with a new respiratory disease that was later called rhinotracheitis (infectious bronchorhinotracheitis). This was again a new disease and Dr. McKercher, having more or less solved the blue tongue problem, took on this new one. Again he found a virus and later on vaccines were developed. Then epizootic bovine abortion, or foothill abortion as it was called, came along. Dr. Howarth was working on that and Dr. McKercher also went to work on this disease.



This has proved to be a tremendous challenge, not completely solved yet. But a virus has been recovered from this disease and the epidemiology of it is being fairly well worked out. It involves certain kind of ticks, apparently, and life cycles in the tick. But it is a very complex thing.

*Is it transferable to man?*

No, "epizootic" means transferable between animals. An epidemic is always among people; "epizootic" is among animals.

In those days, too, there was a lot of urinary calculi in sheep and in the feed lots in cattle. So Dr. Cornelius worked on that problem. We had a regional research project supported by regional agricultural research funds and Dr. Cornelius made some very notable contributions to the understanding of the problem of urinary calculus, not only in animal, but also in man. He helped to develop some rather practical means of reducing the incidents in feed lot conditions. The practical thing to do was to add more salt to the animals' rations so that they would drink more water and reduce the concentration of the substances in the urine that were promoting the calculus formation. (The work toward understanding the mechanism of calculus formation was much more sophisticated, however.)

### **New Buildings and Improved Facilities**

*You received NIH funds during your deanship and you built improved live animal housing--which you've already discussed. You also built a livestock security building. Can you discuss that briefly?*

Yes, I can discuss that. At the time we made our application for these NIH funds to build that facility, we were very alert to two things. One was the possible introduction of very serious foreign animal diseases such as foot and mouth disease, rinderpest and maybe Rift Valley fever, African horse sickness, African swine fever and things of that nature. There was quite a bit of discussion of these threats both nationally and locally. We had just gone through the foreign disease of blue tongue which was a bad disease. IBR [infectious bovine rhinotracheitis] was upon us and we didn't know exactly what that was or where it came from. It seemed like new virus diseases were popping up here and there and more were expected.



We were very alert to the problems of contagion and possibly even sabotage by planned introduction of foreign diseases.

Also, this was the post-Selye age of emphasis upon stress as the important factor in all kinds of disease. At that particular time it was popular to suspect stress and we at least felt that we must investigate. So, there was a strong feeling amongst the people who were working in infectious diseases that we must have a facility in which, if necessary, we could work on almost any disease without endangering the local livestock. They had just built the animal disease center in Iowa, and not too many years before they had completed Plum Island on the national scene.

We in this state had a very important livestock industry and so in essence it was felt that we must be able, if the need arose, to work on any disease that might be introduced in California. Of course we were vulnerable to the introduction of foreign diseases. With all the boats and airplanes that are landing in California from all over the world, there is the possibility of carrying vectors and infected material and so on. We were very conscious about all this and so we put in our budget our proposal to request NIH funds to build such a building. We had sent our plan through the campus architects and told them what we wanted and the capability that we needed. So they provided a cost estimate.

*Was this through. Bill Evans?*

Well, Evans was chief architect in Berkeley. Anyway, we made our submission to NIH on the basis of the estimates provided by the office of the architects and engineers. We got our grant and we started out on the building project. We appointed a building committee with Dr. [John] Osebold as chairman. They consulted the architects again and came back with the information that the building was going to cost twice as much as we had thought.

Well we thought, what do we do now? Our whole building program was tied up in this building. We either went ahead with the program or forgot the whole thing and started all over again. The problem was presented to the Regents and they provided the additional money to go ahead on the new estimate.

*That's ironic in a way, because the original plans for Haring Hall had included that high security disease building.*

Well, it included some similar facilities. Haring Hall was more oriented towards smaller experimental animals than this one which was directed towards livestock.



We proceeded under the assumption that the architects and engineers knew what they were talking about. When we got to the point of letting the contract, lo and behold, the cost had something like doubled again.

You probably ought to interview Dr. Osebold about this because he really sweated through this thing. I was in on the early part of it as dean and on the latter part of it as a member of the building committee. By then Dr. Pritchard was, of course, dean and the whole problem was in his lap.

*Were there two buildings, the livestock security building and then also a poultry disease security building?*

The poultry disease building was an entirely different building. And the poultry building came first; it was built before the others.

*But both of them were started during the time that you were dean?*

Well, the poultry building was finished when I was dean. I've forgotten the year on that.

*It was finished in 1958.*

I'd been dean four years at that time. It was pretty nearly the first new experimental animal unit of any substance to be completed after I became dean. In the case of this poultry disease research building, which is now called Beach Laboratory, there was considerable engineering in it, too, in terms of air flow and of sterilization facilities and so on. These things tend to be very expensive and they tend to be underestimated, I think, by architects and engineers.

## Teaching Support

*What was the situation regarding the quantity and quality of teaching lab animals?*



This is one of the problems of teaching support. I think that we put enough priority on teaching although we may not have had all that the individual instructors would like to have had. In my opinion, I think that we had all that was necessary to do a creditable job of teaching.

In many classes, we used a good many more animals then than we do now. This is for several reasons: one is that they thought they had to use large numbers of dogs, for example in some of the physiology courses, and every student had to do more in the way of experimental observation than they do now. Animals are now more expensive. There are requirements for the housing and care of animals which are substantially greater than the requirements were then. Some of that, I think, is quite desirable. In some areas I would say that they've gone overboard. I've never thought that we had a situation where we engaged in cruelty to animals. If it occurred it was a mistake; it was not policy insofar as animal care and housing were concerned.

But, I do feel that there was some cruelty to animals in many institutions and that more rigid requirements were needed. It happened far too often amongst the animal dealers; they were often, and sometimes still are, cruel to the animals when they dealt with them for laboratory purposes. Again, if they are, they're in violation of federal regulations, but it probably still happens. In some institutions I think that there have been research workers who really had no feeling for or knowledge of the care of animals that they were working with. So I'm generally in favor of the increased federal regulations and requirements for the animals we use in teaching and research.

In the area of physiology now, there are more situations where the instructor will do the experiment and the student will observe the reactions. I think that that is probably wise. There are arguments, of course, on both sides of the fence. We probably make more use of either TV tape; or movies that illustrate a very well-performed experiment--rather than the students doing their own--to demonstrate the principles of the action of drugs or the control of the heart by hormonal and neuro-mechanisms and so on.

### State Boards

*This is changing the subject somewhat--there was a press clipping that said that of all veterinarians who took examinations for openings in public health the top five were UCD graduates. I wondered if you would happen to know the record of passing state board exams during Dr. Hart's administration, during your own, and nowadays?*



Our record on state boards was very, very good. I do not know whether we actually had any failures up to 1962 or not. I would say we had as good a record as any school as far as state board examinations are concerned, particularly California boards. It doesn't make quite so much difference whether it's a California board or some other state board anymore because the main examination is made up of the national board questions. The boards are of such a nature that no matter what school you're from, if you don't prepare for it, you're not going to do too well. A lot of the questions are of the type, "What is the dose of such and such or the life cycle of such a parasite?" details like these are necessary to review.

### Endowment Funds

*You had some endowment funds available during your tenure as dean.  
What were they and how were they used?*

There were the Miller endowment funds which were given by the George Miller Land and Cattle Company. They were given essentially to support research endeavors in which the Department of Veterinary Science was engaged. They were given to the department at Berkeley. It was worded something like that; I haven't reviewed it for a long time, so the exact nature of the wording is a little bit hazy. But this was always interpreted by the president's and the vice president's office, the chancellor and the director of the experiment station to be research in which the School of Veterinary Medicine was engaged. Therefore the dean had a great deal of flexibility in assigning these funds to various projects which he considered to be high priority.

I used them to met the initial costs of things like the blue tongue investigation, IBR investigation and quite a variety of other things. They were extremely useful funds because we could count on them being available year after year. And, of course, we spent the interest earned by the investment. The income varied a little bit from year to year.

*What kind of money are we talking about as far as annual income is concerned?*

Oh, I think it was \$20,000 to \$30,000, something like that. I may have over estimated that. I haven't thought about it for years. But whatever it was, it was large enough to be extremely useful.

*Then you had the Harden fund as well?*



The Harden fund was much smaller. I think we used that primarily in the area of small animals, if I'm not mistaken, to meet various types of emergencies.

*Did the Hart funds come into play during your tenure, or was that later?*

That was later. But, I might say, with respect to the Miller fund (and Dean Pritchard talked to me about this a year or so ago) that a budget officer in the president's office advised the president that these Miller funds had been misused all these years; that it was an administrative mistake to regard these funds as being essentially School of Veterinary Medicine funds, and that they were university-wide funds. So within the last year or so (at least the last I heard) the president made a decision that he would no longer regard these funds as being available to the School of Veterinary Medicine, but available to the president's office, and to be distributed as he saw fit.

I strongly disagree with that interpretation. I believe that it's wrong and I believe that President Sproul, President Kerr, and President Hitch up to the present time and the chancellors up to the present time had interpreted it correctly. But that's the way it goes sometimes.

## The Balance Sheet

*In summary, when you look back, what do you consider to be your main accomplishments during your tenure as dean?*

Well that's a very good question. I've never had any doubts that I accomplished a great deal and essentially about all that anyone could have hoped to accomplish at that time. I did substantially increase the budget of the school. Now when I say "I", I realize that there were a lot of other people involved: chancellors Freeborn and Mrak, the president, Harry Wellman, the acting department chairmen and the people who were doing a good job in the school and so on. We were all involved. Nevertheless, the primary responsibility was mine. During my administration, a worthwhile and notable accomplishment was the establishment of a very substantial budget increase, indicating a real change of heart and mind on the part of the university administration toward the financing of veterinary medicine. The administration was convinced that we had legitimate needs and a great future. And they supported us as it was their intention and anticipation that we would continue to grow.



That is reflected in the plans for expansion that were submitted in 1961 and approved by the Regents in the spring of 1962 while I was still dean. These plans called for a relocation of the veterinary school, for expansion to 120 or 124 students, for expansion of a graduate program of 100 or 120 graduate students (I've forgotten the exact number) and another expansion plan that is in most respects almost identical to the one we're still hoping to achieve.

We had the Regents' go-ahead and though we didn't get the financing of it all, they approved the plan and they really expected, I think, it to be accomplished before now. There are many reasons why it hasn't been: changes in NIH funding and state funding, and the change in attitude toward the University after the riots of the '60s. These are things completely out of our control.

Another accomplishment was the development of very positive relationships with both the livestock industry and the veterinary profession. They were excellent by the time I left the dean's office. In fact, people in the veterinary profession and people in the state association in the industry expressed to me their desire that I continue on as dean. They wanted to go to the administration and insist upon it." I told them no, I preferred that they not do that; that I felt the time had come for me to go back into teaching and research.

*What were some of the reasons that led you to that conclusion? Did they include reasons of health?*

I had become dean at a very young age. In looking back I can appreciate that I was inexperienced in some areas of administration. It would have been helpful to have had more experience. And I became dean at a very difficult time. For one thing I was following a man of tremendous administrative ability who operated, in some respects, above the rules and regulations of the University. As I indicated in my history, Dr. Hart said, "Well, if they don't like it, they can fire me." It didn't make any difference to him as he was already beyond normal retirement age. He had a lot of money to live on and nobody was about to fire him. I had to operate at the other extreme because I had more or less everything to lose and nothing to gain, so to speak. I was young and essentially of no reputation in the livestock industry or among the veterinary profession, or in the scientific and administrative communities. So I had to prove myself at every step.



I inherited a little bit of backlash. Dr. Hart and the veterinary school had stepped on some toes. The "master" was no longer there and the veterinary school was not going to get away with anything anymore. As I said previously, the attitude in some important places was that the veterinary school had all it was going to get.

Then in this period of very rapid expansion, the budget of the school was extraordinarily low. There was a lot of competition for what budget there was and I couldn't increase it as fast as it was needed. We were all a little bit unhappy with the way we had to live the first few years. So I was kind of between the faculty on the one hand and the administration on the other. And maybe the faculty's expectations were a little bit greater than they should have been under the circumstances.

We also had a lot of young bucks in here who were very energetic and enthusiastic and capable. And they were knocking their heads together and we had a lot of adjustments to make. As they grew a little bit older they were not as concerned about their prerogatives or whether their toes were being stepped on by somebody. So, these were some of the conflicts that I had to get involved in and settle one way or the other. And when we settled, something, usually only one person was happy and sometimes nobody was.

I didn't have the help that I needed in the dean's office. I diverted some of the dean's funds to help the departments meet their teaching and research needs rather than secure a little more help in my own office--I was doing too much myself.

Mrs. [Jane] Vansell created a special problem. She was an extremely nice person and she was loyal to me in many respects and even regarded me as her "little boy." But the job had outgrown her. Her vision of the veterinary school was somewhat limited. Her view was probably shaped by Dr. Hart who said that he could see maybe someday, after he retired, the school might have as many as forty-five faculty members. She was great for a small department of five or ten people, but she wasn't up to being an administrative assistant. She was essentially a secretary. But it was a situation in which I could hardly fire her. Her daughter had developed malignant melanoma and it went on for two or three years. So she was emotionally upset all this time also. Before her daughter got sick her husband had died. When her daughter finally died, she retired. So we had five years or so in which my main administrative assistant more or less had to be carried emotionally, which was a problem. And I was working too intensively myself. I had a year in which I was very anxious myself. In fact, at one time I stayed out for about a month.

There were several departments in which there was dissatisfaction with the acting chairmen. There really wasn't much alternative because some of those who were potential department leaders were still graduate students. In some cases, the chairman was the only person who could be appointed at the time.



There was a problem in 1956-57 in microbiology. Dr. McKercher had been asked by Dr. Hart to serve as the department chairman there. I continued that for the first two years I was dean, but during the second year I began to realize that people in the department weren't too satisfied with that arrangement. When Dr. McKercher took a six month's leave to Africa, Dr. Douglas was asked to act as department leader during his absence. This worked out very well from the standpoint of the department and it was obvious that the welfare of the department would be served if Dr. Douglas were eventually asked to remain as chairman. We had discussed this matter and Dr. Douglas had let me know that he would be willing to serve if he were asked, but I told him that I could not make a change while Dr. McKercher was away (behind his back, so to speak), but that when Dr. McKercher returned we would talk about it again. I wanted to talk to McKercher soon after he returned, but I knew that to write anything to him while he was away would distress him terribly and ruin his leave.

Well, on his return, he had no sooner stuck his head in the door than he heard the rumors. He felt betrayed and said he was going to quit. As I've already pointed out, he was a very valuable man. Of course, I did everything I could to get him not to quit.

I think I've already mentioned that we were in this transition period, with the need to hire secretaries, administrative assistants, business people and bookkeepers. Funds were needed but not yet available, I was working far too many hours and it did catch up with me, there was no question about it.

Dr. Cameron was giving me a bit of a time. He was all for me (or at least he was all against Dr. Schalm), but he also felt I should follow his ideas on things. They weren't, in my opinion or that of others, always the best ideas. But Dr. Cameron was an older, prominent man on the campus with membership on the budget committee and input into various places and a good friend of the chancellor. These things made it difficult for a younger person.

At this time Dr. Cameron got at loggerheads with the Department of Agriculture in California over the right approach to brucellosis control. As a matter of fact, the state veterinarian and the federal veterinarian had opposing views.

The federal veterinarian and Dr. Cameron supported each other in opposition to the state veterinarian. Quite a little struggle was going on. I suppose that neither side was entirely right or wrong but I supported Dr. Cameron.

Dr. Cameron also had a small grant from the USDA research branch to do brucella research. The difficult thing was that he got in trouble with the research people in Beltsville, Maryland, not so much over the research or his results, but over the way that he was reporting it. In his reports he appeared to go out of his way to take some digs



at Beltsville. They talked to him about it, and they talked to me about it. I could see what the problem was. It really seemed quite unnecessary to me for Dr. Cameron to put these few little digs in his research publications. It got to the point that, when he wrote his report, they refused to allow him to give Beltsville credit for supporting the research. You can imagine how Beltsville had begun to feel about giving any more money. They told me that unless Cameron essentially "straightened up and flew right" they were going to discontinue his support.

I reported that to Dr. Cameron and I also got him to let me look over a manuscript before he published it. I said, "Hugh, this is fine, but this little sentence right here--why don't we leave this out, or why don't we word it thus and so?" (It had nothing to do with reporting the scientific aspects but simply took digs at the federal research people.) He would have absolutely nothing to do with changing that and somehow he seemed to feel that they wouldn't dare take away his support. He had it published the way he intended.

Later, when I was at some Washington, D.C. meetings, Beltsville's main brucellosis man, Dr. Manthei, and the head of their research program, Dr. Johnson, told me how unhappy they were. I argued with Manthei in the hotel room for hours (about four or five hours) until two or two-thirty in the morning, trying to get him to continue supporting Cameron. I argued, that Cameron was doing good research. But no, that was the end--no more research money for Cameron.

Dr. Johnson, who was head of the whole research grant program, was willing to use that money to support Dr. Schalm in his mastitis research (Schalm and Johnson had been classmates). Johnson had in mind that he would switch from brucellosis to mastitis and wanted to know if I would approve it. I didn't want to see the brucella money turned off, but if they were going to do that anyway, I was glad to have it changed to mastitis.

Well, in Dr. Cameron's eyes I had betrayed him. He thought I had engineered the whole thing and he was extremely unhappy with me. I thought it ended there, but I found out later on that he was complaining to Chancellor Mrak (I don't know whether he complained directly to Aldrich or not). After I had indicated a desire to resign as dean and go back to being a professor, I found out from Mrak that he and Aldrich were very concerned that I had betrayed Cameron in the fashion that he had reported.

These were some pressures that took a personal toll at the time.

*They have a cumulative effect that can be a bit overwhelming.*



Yes, they do. At a meeting in Salt Lake City, I had a little attack of anxiety and came home to see a doctor about it. Of course, I was feeling nervous and depressed so he thought the thing to do was to give me Dexamyl which has a tranquilizing effect and Benzedrine for a stimulating effect. The Benzedrine was just what I did not need; it just made things worse so I got the advice of another physician and he cut that medication out and I was fine. After this in the spring of '57, there were a few months that I was not up to par, there is no question about it.

*Was there an acting dean during this time?*

Dr. Schalm, of course, was associate dean. I took some time off (a month to six weeks) and Dr. Schalm was acting dean. Then I came back. I was not 100 percent at first, but I was improving rapidly and taking care of my responsibilities.

That's the only health problem I have had. I recovered completely from that and learned a little bit too about pacing myself. I've been in very good health ever since. After I had this little period of anxiety I eventually decided that, if this was the price of being dean, I didn't want to mess around with it. And I told the chancellor and Aldrich that I would resign as dean and go back to being professor. It took them two years to get a successor and during that two years I must say that I was very, very happy with the progress that we made.

[Chancellor Mrak was in hot pursuit of Dean W. T. S. Thorpe of Minnesota to succeed me as dean. He apprised me of the likelihood of Thorpe being dean and Thorpe visited me about one year (summer, 1961) after I indicated my desire to resign from administration. About Christmas of 1961, Mrak told me he was sure he was coming. Then in January of 1962, Mrak informed me that Thorpe was not coming. Thorpe finally told Mrak he would come only if he were also given the title of vice chancellor. That was too much for Mrak and he was really quite angry about it. I heard no more about any candidates for the deanship until about May or June in 1962 when Dr. Sadler stopped me in the hall and asked if I knew Bill Pritchard had been named dean of the school. I knew nothing about it at all. Dr. Sadler had seen the announcement in the newspaper. Of course, I then got a copy and read all about it.

The transition was smooth. I told Bill everything I could think of that would orient and help him and told him I wanted to be helpful at anytime but I had no intention of intruding myself in any way in his administration. I kept my promise and we have gotten along very well indeed.--D. Jasper.]



In summary, in thinking about the deanship I'm really very well satisfied with the total accomplishments. I can look back and say that my judgment with respect to faculty and the hiring of people and with respect to student activity has been very well justified by the events that have happened since.

I do not think I made any significant mistakes, at least nothing significant that would hurt the school either locally, nationally or internationally. We did develop during this time excellent industry relationships. The school achieved international reputation and full accreditation. I was personally well received nationally and around the world. The teaching and research program was substantially developed. So, all in all, I think those were good years. I was glad to be dean, and I've enjoyed my professorship since.

### Other Opportunities

*Over the years, I would imagine that you have been offered other opportunities, both as a professor and as an administrator, have you not?*

Yes, that is true. I was immediately asked to consider a position as a director of research in one of our major universities. I was invited to consider a position as director of perhaps the best known animal hospital organization in the world. I was invited to consider some associate deanships and directorships in research and to be department chairman for a department of veterinary science in a state without a veterinary school.

Some assumed that upon leaving the deanship I would want to leave California. But I could see no reason at all for doing that unless I was invited to do something that I really wanted to do. My decision was that I would be better off staying here. And I think I was correct because certainly I have been doing very interesting things since I left the deanship. I've taken over a lot of responsibilities and have been on a lot of important committees in the University. I am director of the Chile-California program. I've been graduate advisor to the large group of comparative pathology students. We've been averaging sixty to eighty students and that means a lot of advising. I've thoroughly enjoyed that. That's been an important thing in addition to a teaching load which has not been particularly heavy and a research activity that's been quite interesting.

### Research Activities

This past July, I received a five-year grant (\$50,000 per year) for research on mycoplasma mastitis and another \$25,000 per year grant for research on coliform mastitis. So I'm now getting \$75,000 per year from the dairy industry for mastitis research. That's the first grant of this nature that they have given. So we're moving in this direction now.



*I know you have more than 130 published papers. Originally, as I recall, your research was in metabolic disease and pathology, hematology and more recently in bovine mastitis as you have just said. What do you consider to be the most important areas of your research?*

The most important area is the research that I am doing right now in mastitis--looking at it as a total problem with its various ramifications and now focusing primarily on mycoplasma infections and coliform infections.

When I first got involved in mastitis work in 1962, the adverse influence of mastitis on milk quality was just beginning to be understood. Milk, as you know, has long been regarded as one of our safest and one of our most nutritious foods. This is a very well-deserved reputation and it has never been more true than it is today. The milk industry itself has led the way in developing tighter and tighter standards. You might be interested to know that, whereas the United States Public Health Service permits 100,000 bacteria per mil of raw milk as it comes from the dairy, in California we allow only 50,000. Much of the world wouldn't even bother to count, but our health services and milk industry worry whether the milk is going to turn sour or not and whether it is safe to drink at all times.

The bacteria count reflects mostly the circumstances affecting milk after it leaves the cow: is it properly refrigerated? does dirt from the outside get into it?--things of that nature. About the time I got involved in mastitis, the milk industry was beginning to be concerned about the cell count or the leukocyte count which comes from inflamed udders. So we were interested in monitoring the leukocyte count of milk. I think it's interesting to realize that this is not just a government imposing monitoring, rather a self-imposed monitoring by the milk industry. As a matter of fact, it was the Interstate Milk Shippers, the association of processors that ships interstate. This association includes all the major processors. They appointed a scientific committee to make recommendations on this leukocyte count and I happened to be a member of this committee. We came up with the recommended cell level of a million and a half. The Interstate Milk Shippers accepted our report and recommended that the United States Public Health Service institute a monitoring system and use a million and a half cells as the maximum permissible level.

The Public Health Service adopted this policy and that's the policy today. We're now discussing whether it should be lowered a bit. I'm sure that it will be lowered as soon as we can be sure of our methodology for measuring the number of cells. Then we'll be able to properly advise the dairyman so that he'll be able to avoid reaching the limit.



*Dr. Jasper, in completing our discussion on research, who is presently doing the most effective research, on the whole? Would it be the government agencies or industry labs, or the educational institutions?*

That's a very profound question, Dick, and I suppose that there are very few people that have made a sufficient study of that subject to give a really authoritative answer. I suspect that most research workers, no matter where they're located, have an opinion about it.

I was reading, a year or so ago, something to the effect that 80 percent of the important discoveries were made by industry. The percent through government and educational universities and so on obviously then would be very much lower. How one would arrive at those figures would depend upon what one records as an important discovery. I think that sometimes we in the universities and in government tend to underestimate the contributions that have come from industry.

For example, we're talking on a recording machine--I think most of the tape recording systems are industry developed. Bell Telephone, RCA, Sony and all these companies have made tremendous breakthroughs in miniaturization and in different ways of handling sound, recording, transmission and radio, television, and so on. If you look at the pharmaceutical industry, most of the new drugs and a great many of the vaccines have come from industry, not from universities or government agencies.

Someone then might say well, yes, but the real basic science is in the universities and without the basic research none of these developments, improvements and breakthroughs in industry would occur. Well, there's some truth in that, but it is not all true either because there have been real basic breakthroughs in industry as well.

I don't know whether that 80 percent is correct, but probably the majority of significant breakthroughs and developments have been in the private sphere. I'd also say that this would not be possible without the universities performing their function of good education, good Ph.D. training, and their own share of breakthroughs, whatever that share may be. The decoding of DNA at a university, for example, by Watson and Crick was a tremendous breakthrough.

Space technology was quite a marriage of government money and contracts to private industry. We would not have gotten to the moon if universities, government agencies and private industries were not all involved. None of them could have done it alone by any means.



## Veterinary Medicine--A Good Life

*Is veterinary medicine a good field to be in?*

Well, I will say this: veterinary medicine has been very good to me and it's been very good to most of the veterinarians that I know. I think that most of them are quite happy and satisfied to be veterinarians.

If a young man were to ask me, "Should I be a veterinarian or should I go to medical school?" (assuming he could do either), it would be very hard for me to answer his question. I've been very close to veterinary students and to a large number of veterinarians in the profession throughout the country and the world. I've rubbed elbows with a lot of medical people and I've seen quite a few of the medical students. And my son graduated in medicine and is now in a surgical residency. I get input from him and see what he's going through and I see the social problems that are tying the physicians up in knots.

I have an idea that most veterinarians are really happier than most physicians. But, most physicians think they're smarter and more important and doing a more difficult job. I know that the challenges and the decisions that the veterinarian in food animal practice has to meet are just as challenging to the intellect and demand as much knowledge as any decisions that physicians have to make.

A good veterinarian doesn't have to apologize to anybody for the level of his intellectual endeavors. The complexity of many of the decisions that he makes spell the difference between bankruptcy and success for a great many families. Then the person is doing the kind of a job he ought to in small animal practice is also dealing with the emotions and the happiness of a great many people of all ages. Research workers are also making some very real contributions.

I guess the fellow that asked me the question ultimately is going to have to decide for himself. I believe he can be very happy and do a very fine job either way he goes. I think that I have the advantage of working in a relatively small profession. I have been able to know personally and have as my friends a good many of its great leaders both in this country and throughout the world. I've been able to reach the top in a couple of areas. One is education: as the dean of the school, I helped a young school

grow to the point where it is now recognized by many people as the best in the United States and maybe the best in the world. Now that I'm in the area of research, I am internationally known and welcomed throughout the world. I'm leaving this week for an



international conference in England as one of four invited guests from the United States. I'm going to New Zealand next year on sabbatical leave--which should be very interesting. I'm invited to a laboratory in Australia for a month or six weeks en route--which again should be very interesting. I have open invitations from outstanding scientists throughout the world and I will be seeing many of them.

I have nothing, really, to complain about, and a tremendous amount to be very thankful for and I am thankful. I'm earning a satisfactory living (I would love to make twice as much as I'm making). But I'm getting plenty and I'm getting a lot of satisfaction along the way. It's been a good life and I've enjoyed it and I look forward to a few more years of enjoyment before I retire. I look forward to retirement, too.

*Thank you very much for a very interesting memoir.*



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## Logan M. Julian

### Interviewer's Notes:

These interviews were conducted by A.I. Dickman in 1974.

### Curriculum Vitae:

1923 -- 1983

**Chairman, Department of Anatomy, UCD; 1960 - 1965**

**Professor, School of Veterinary Medicine; 1961 - 1983**

**Assist./Assoc. Professor, School of Veterinary Medicine;  
1951 - 1961**

**Associate/Lecturer, UC; 1946 - 1951**







## Logan M. Julian

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### Early Life And Childhood

I was born in Ashland, Oregon, on August 12, 1923, My parents were Mr. and Mrs. Logan M. Julian (my mother's maiden name was Gertrude S. Miksch). I had no brothers or sisters; I was born in a year when people found it was not fashionable to have large families. I grew up in a thinly populated environment, children-wise.

My schools varied; my father's position most of the years that I went to school was as a specialty salesman for R. J. Reynolds Tobacco Co. It's a position that doesn't exist today, but men represented the various tobacco companies and, essentially, advertised their products to sell them. This caused us to move a great deal and I don't know for sure now, but I think I went to a dozen individual schools before I got out of high school. These were distributed between Tacoma and Seattle, Washington, down to Los Angeles and all over the West Coast. From the eighth through the twelfth grades I was in Tacoma, Washington. So, in a way I did not develop great attachments, but usually one very fast friend at each site.

*When you finished grade school did you go to high school in Tacoma?*

In Tacoma, Washington I went to Lincoln High School, and at that time there were only three high schools in the town. If you lived on the wrong side of the railroad tracks you went to Lincoln High School; if you lived with the rich people you went to Stadium High School, and if you were a Catholic you went to another high school.



I should mention that one influence in my early development was a very patient grandfather who had, interestingly enough, once aspired to veterinary science. He didn't talk much about this, but I recall his demonstrating the anatomy of a rabbit as he proceeded to commercially clean the rabbit.

*Did you see him often when you were growing up?*

Oh yes, about every summer until I was twelve, then he died. We'd be in Ashland, Oregon as soon as I was out of school and my mother would go to Ashland to be with her parents.

*Do you feel that you were close to your father and your mother as well as to your grandfather?*

Well, I'd say mostly the mother. I've never been too close to my father for assorted reasons.

*Were you called by any nicknames when you were growing up?*

Because we were always moving, I had the unique opportunity of changing my name wherever I went to a new school. So I could change my name to another one when I got tired of it and try that one for six months while I'd be at that school.

But, during the pre-FDR days I picked up the name of Hoover and, of course, when I got glasses at age six I collected the usual "four-eyes" and such as that. Later on I picked up some other names during the army days. I'm still known by Skip because of the way I marched during the army days--that's what the big boys say.

*Had your ideas regarding an occupation crystallized at all in high school?*

Not exactly. Although I was required to take courses identified as courses dealing with occupations, they were of little value in selecting an occupation or profession. It is probable that my interest in veterinary medicine was initiated by a subtle intrigue with the mysteries of anatomy--my grandfather cleaning a rabbit and identifying parts or my mother cleaning a New York dressed chicken for the table (in those days all poultry



came from the meat market with head on and guts intact). I had relatively little guidance in choosing veterinary medicine as a profession, but there were a number of contributing factors involved. We always had a dog as a family pet. In fact, my folks got a dog before they got me, "Animal heat is best," and so I slept with the Manchester terrier in lieu of a hot water bottle. I recall excitement when the terrier presented us with a litter of puppies.

My paternal grandparents had ranches in eastern and western Oregon, and so I gradually learned something of the animal-animal owner-veterinarian triadal relationship although I never saw a veterinarian on my grandfather's place. They were something that was available if everything else failed. And so this attitude, a well-recognized drawback of food animal medicine in those days, was prevalent in my stock. That veterinary service differed was brought home to me when our current household pet tangled with my uncle's sheep dog and was taken to a country-style veterinarian in the Staton, Oregon area. His enucleated eyeball was tied off and we were assured that it would sluff off in a few days. Upon returning to our home in Tacoma, Washington a few days later, the eye was removed surgically by Dr. Button. The service this man rendered was very impressive.

Of course, we always remember the most dramatic things such as the time that the cocker spaniel bitch developed eclampsia. The sight of her complete recovery from total bodily paralysis by the deft injection of calcium gluconate is a very impressive sight, especially since the subject was the very matronly Sally who produced a number of litters of nonregistered but purebred cocker spaniel puppies. The disposal of these puppies taught me a great deal, too, about the animal-people relationship. Willfully attempting to match a puppy's personality with that of a prospective owner is an experience that will be testified to by professional dog breeders.

I had previously been impressed by the dramatic nature of veterinary medicine when a veterinarian was good enough to speak to our Boy Scout troop in Monrovia, California. He described bloat in cattle and described the puncturing operations that is done to relieve the pressure and dramatically described the two-foot column of flame that would result if the escaping methane were ignited. At the time this was a small impression which was later to contribute to my decision to become a veterinarian.

In talking with Dr. Button I recall that he mentioned similarities between veterinary medicine and human medicine. My father took particular note of my obvious interests in Dr. Button's words and kept this information for future reference when he was to advise me as to what I might do with myself. But this occurred later when I had demonstrated a complete inability to perform in a position such as he had.



From early childhood I had been interested in animal sculpture and art. During my senior year of high school I spent a great deal of time engaged in animal portraiture for dog and horse owners, I earned approximately one-half of the first year's college expenses but proved, during a spring vacation trial, that I could not make a living wage at art.

I had worked for a number of years as a delivery boy in a local drugstore. My father, a very practical man, pointed out that a pharmacist was essentially a storekeeper, except in very rare instances, and he would like to see me in a position of a little more independence and suggested veterinary medicine as a possibility.

*Were you a fairly good student?*

Fair, I think. For some reason or other I was not repulsed by teachers and, in fact, even today I have kept track of a high school teacher and I am still in touch with a college instructor.

*What did this high school teacher teach?*

English, which doesn't make sense either, but it's just one of those things.

*Were you better in the sciences and mathematics than you were . . .*

I felt like I was. I was interested in art, too. I have described the work as a portrait artist. I worked in pastels, conte crayon, and charcoal.

All in all it became rather natural to think of veterinary school as a possibility. Then, of course, I graduated from high school in 1942 and the previous December we had entered World War II. I was somewhat encouraged to find that there was some opportunity available to train for veterinary science in the military service and you could prepare for something that you might want to do later.

### **Student Of Veterinary Medicine At WSU**

So, I went to college and immediately enlisted in the reserve corps and then the next July I went into the active army and was there for about a year. At the same time I was admitted to veterinary school, in the summer of 1943.



*And the name of the school?*

In Pullman, Washington, Washington State University. This made kind of a hurried up curriculum. I think I got through five years of professional training and pre-professional training (they only required one year of pre-veterinary medicine in those days) in something like three and two-third years; so that by January of 1946, I had completed my veterinary training at which time I then came to California.

*Did you live at home when you were in college?*

No. Our home was in Tacoma, Washington and Pullman was near the Idaho line. So, I got home very seldom, especially during the wartime years.

*That was your social life? Were you fraternity?*

No, independent. I had essentially no social life in a way. We were, for eleven months, in military barracks and then we (at the convenience of the government) went back on our draft boards and at that time there was no formal university housing. The only people going to the university were people such as ourselves who had been in the military, those being trained in the military, or people (as we were then) released from the military and back in school.

*Does this mean that you went to school twelve months a year? You had no summer vacation?*

That's right, there was no summer vacation.

*That's why you could do five plus years in actually four years time.*

Three and two-thirds.



*What was the size of the class?*

Our class started out to be about fifty, but our graduating class was twenty-two.

*My goodness, that's a big fallout rate.*

Well, it wasn't all fallout rate because about half of the people that had been in the military with me stayed in the military. They took the option to stay in the military instead of going back on the draft board and so they wound up in the active army (they had a choice of being dismissed at the convenience of the army or going on active duty). This was about the time of the Battle of the Bulge and I had a number of classmates that went to that battle and they actually wound up meeting the Russians and so on, in Berlin.

*Were you ever called up by the draft board?*

Yes, because this had been such a convenience to the military (we were then subject to call until age fifty-five). I was called up in (I think) 1948. By that time our activities there at the university were considered, I don't know if they were essential, but they matched that requirement with the military.

*So you didn't have to serve your active duty?*

No, no more.

*Were you a pretty good student in vet med school?*

Yes, fairly good. At that time in the graduation procedures in Pullman, I just was not quite good enough. I couldn't be awarded highest honors without writing a special thesis and taking essentially a prelim examination. So, I took the prelim examination and wrote the thesis and was awarded the B.S. with highest honors.



*At the time that you were going to Pullman as I recall, the School of Veterinary Medicine there had been going through some difficult times?*

Yes, very difficult.

*Was this obvious to you as a student?*

Yes, it was obvious to me because they were having investigations. In fact, I was aware of such things as the accreditation committees and their activities before I got into the local agenda. Yes, the school was going through some very bad times and I think our class graduated at the lowest ebb of WSU for a number of years. Everything was improvement after that.

Just off the cuff, I kind of wonder about these things when we think about how essential it is that we have certain things or we will fail at a new curriculum when you realize that the total staff of WSU Veterinary School at the time I graduated was less than our anatomy department is now,

*How were the lab facilities?*

Well, they were good because we had small classes.

*So, in spite of the disadvantages, you feel that your training and your education are comparable to what is given now?*

I don't know. It's hard to know. Are we producing today people that are that much better than I was because we're using a lot more money and a lot more facilities? I really don't know. I have given this subject considerable thought, especially during the forced sabbatical of the past five months waiting for a broken femur to repair. I have thought about these things when considering the makeup of new curriculum and the contributions of the subject of anatomy to said curriculum. As poor as our training might have been at Pullman, we seem to have gotten the essential foundation upon which to build. I think of this when listening to a classmate or a contemporary upper classman now employed by the staff of the University of California as he presents a lecture in advanced immunology (graduate course) and expounds mightily in the area of biochemistry. I have been impressed as I recall that his training, as mine, at WSU consisted of one short organic chemistry course in physiological chemistry that was shared with home economics majors. I am sure that I have capitalized upon similar foundations.



*How long did you study anatomy?*

Forever. Anatomical instruction extended for a full two years. One full year was spent on the anatomy of the cow and one semester was spent on the rest of the animals. With this system, one-half of the veterinary curriculum had been completed when anatomy was completed. Structural information was being presented after instruction in physiology and pathology. To me, this did not seem to be the proper sequence and thus I have developed the attitude that anatomy should be completed very early in the curriculum. Under the older program, anatomy became a drudgery without an obvious significance to other subjects in the curriculum. Actually, what has become known as the California system of presentation of anatomy has been developed in direct reaction to my experience as a student.

Of course, these things may be somewhat cyclic, as I smilingly note some of the changes that are proposed for our new curriculum in the School of Veterinary Medicine appear to me to be direct reactions to the California system as I have presented it for the past twenty-five years.

**Influences Leading To The Division Of Veterinary  
Science At Berkeley**

*What did you do after you left Pullman?*

I went directly to Berkeley. I graduated in January of 1941 and I went to work for the University of California March 1, 1946.

*How did you get the job?*

I got the job through an instructor of mine. I became interested in research and became very well acquainted with Dr. E. C. McCulloch who was one of two men on our staff in Pullman doing any research. He was a microbiologist and he contacted Dr. [C.M.] Haring [first dean of the school of Veterinary Medicine, UC Davis], and got me this job as well as a job for a classmate who was here one month with me--a fellow by the name of Walt Zeigler.



*The fact that Donald Jasper [professor of veterinary medicine UC Davis] had graduated earlier had no . . . You didn't know him at that time?*

I didn't know him. In fact, he graduated in the year that I was still a pre-vet.

*Before we get to your Berkeley position, just a few things about your early attitudes You said you preferred research. You had at no time ever wanted to practice?*

Yes, I wanted to practice. Of course, when you become a veterinarian you don't know what veterinary medicine is all about. No pre-veterinary student can know all of the applications of veterinary medicine. So, I went to school aspiring to be another Dr. Button.

But I didn't know about what other things veterinarians do. Of course, in the environment at Pullman, I knew that there was teaching going on, but I didn't know about research except that there were two professors that did research.

There was this strange man, E. C. McCulloch, a veterinary microbiologist, who worked Sunday mornings in his laboratory and there was an interesting man who later became head of the zoology department--Herb Eastlick, who on summer evenings did experimental embryology in his laboratory and on occasion he invited me in to watch it. He had to work when it was late at night when everything was quiet because the operations were done on four-day old chicken embryos and they were very delicate. I think the influence of this zoologist was considerable. My interest was furthered by taking undergraduate research courses from Dr. Eastlick during my senior year.

All this time I was becoming aware of new things. I was becoming aware that they did things like experimental embryology. So, later I had some choices to make. We have the same thing; it happens even today, that occasionally we hear of a veterinary student who becomes a meat inspector. It was something that he didn't know about, but that appealed to him after he qualified.

*So this crystallized your desire to go into research rather than practice?*



Yes, I would say it was the influence of Herb Eastlick and Dr. McCulloch. Dr. Button aspired me to veterinary medicine, then I found out that veterinarians do other things besides patch up dogs.

*Did you feel you were a particularly ambitious person?*

No, I decided that, as far as money was concerned, I had made a number of observations and money seemed to be desirable if you could have enough of it so that if you really wanted something, you could aspire to get it. (Not necessarily that you would get it in the next month, but that you would know that you could get it sooner or later.) Yet, on the other hand, I didn't think it was necessary to have enough money available that I could buy a new car every week or anything like that. So I decided upon a career of research and teaching when I found that these interests could be combined and at a livable wage.

*What were your pet likes and dislikes and have they changed over the years?*

I probably need some examples here. I was essentially an animal nut (in the way of having a deep regard for pet animals) and that has not changed. I think some of the same things bother me today that did then. Dishonesty makes me furious, and this so-called intellectual dishonesty that you sometimes find in higher places--you know, we just got through this Watergate crap. I got pretty damn sick of that.

*What were your work habits?*

Work habits were lengthy. During the period of 1948 and 1949 when I did my research work for my thesis, work at that time was approximately twenty hours a day, seven days a week and I usually felt I was able to head for home about 4:00 A.M. and I knew I'd have to be back about 8:00 A.M. to kill another group of animals. It was simply a matter of designing an experiment and learning about experimental design and what can be done, and what's humanly possible. I never have succeeded, really, in learning that (how to fit what was humanly possible into what is realistic). I had, and still have, a firm belief that the individual value of observations is increased by increasing the scope of observations made on a specimen.



*You went to Berkeley then. Did you have any other job opportunities?*

There were a few I had that I recall. I remember one application to Cornell, but I took the one in Berkeley [associate in experiment station] because they had a new veterinary school coming up. Frankly, they would pay a living wage.

*Do you remember what your first salary was?*

One hundred fifty-three dollars per month (take home pay).

*You were still single?*

Yes. It was actually three thousand a year. When I came to Berkeley I knew of Dr. [Oscar] Schalm and Dr. [Jacob] Traum because Dr. McCulloch had talked about Dr. Schalm's work on mastitis and we had learned about "Traum's disease" (procine brucellosis). They were the only two men I knew of actually on the staff.

I was hired by Dr. Haring with the understanding that within a year or two I was to move to Davis; that was pretty clear-cut. There was some dissension on this, and some efforts were made to have the new School of Veterinary Medicine located around Concord or somewhere in that area.

*On the Gill Tract in Albany, I understand.*

Well, I didn't follow that too much because I had signed a contract with Dr. Haring (when I had taken this job) that I was going to Davis, and so . . .

*And that was in 1946?*

Yes.

## Graduate Study

There were two opportunities to do graduate work. I could work with Dr. Schalm or work with a man by the name of Dr. [Kenneth] De Ome. Dr. De Ome was



fashioning himself to be the pathologist for the veterinary school and I acquired a liking for pathology during my career as a veterinary student (I was unofficially acting pathologist at Pullman) and so I chose Dr. De Ome. The switch to anatomy later was easy (after all, pathology is simply an excuse to study functional anatomy).

Then, as the school developed, in 1948 when we took the first class, I was still stationed at Berkeley, but I was on the Davis campus for five days a week.

*You were a graduate student; you decided to go on and get your Ph.D.?*

Well, it was the way things were done. I did not do much of the deciding. Things were decided for me. It became evident, but not stated as such, that I had the opportunity to develop a field of life work, but I would have to become qualified for this task. Qualifications was defined as, among other things, obtaining the Ph.D. degree. I recall Dean Hart explaining this to me in monosyllabic terms. He traced the history of American education as he saw it (and rightly, too). I have come to understand his message over the years through international assignments, etc.; and I have come to find his description of the situation pretty accurate. He pointed out that in Haring's and Traum's time the D.V.M. degree was adequate to get one on the academic ladder. At the same time college degrees became more prevalent in the general population. He pointed out how this could be traced in one's own family experience. I was assured that the time would come when the Ph.D. would be required for the bearer of professional degrees just as it was required universally for the bearer of academic degrees. This would apply even to human medicine, and it has.

*What about your work with Dr. De Ome?*

My thesis work was with him.

*What was the subject of your thesis?*

Dr. De Ome put me to work on radioactive isotopes. His attitude was that there's great excitement these days in the application of radioactive isotopes to biology. Now, veterinarians should find out about this and know something about it.

And so I took courses from the Donner Laboratory Group. At that time my attitude was that the highest life would be to be doing research on cancer, I started some work



on the use of radioactive phosphorus (P32) in growing chicken tumors (Transplantable tumors). So, my thesis was essentially how the growing tumors handled a tracer dose of radioactive phosphorus in various growth states (in embryos and in young chicks and adults and so on).

*Did you have trouble getting much of the radioactive phosphorus?*

No, in those days it was just becoming available. Because some veterinarians, of all things, were becoming interested in them, we received a little national publicity on this and we received a great deal of cooperation.

*Dr. Julian, in connection with the research that you did for your Ph.D. degree, De Ome has told me that your titration method for detection of metastatic cells in the blood of chickens was a bright light in the study of tumor metastasis.*

About this tumor research, metastasis, I did my work with a transplantable tumor and it was in the days when there was much confusion between making cellular transplants of an already growing tumor and transferring of virus.

It was argued that most of my work merely represented virus transfer, whereas I argued that undoubtedly a virus existed but it was merely going along for the ride. My experiments could be explained on the basis of the transplantation of a population of growing, viable tumor cells--cells which had previously undergone the neoplastic change. Maybe this was just a matter of being there at the wrong time because nowadays, some twenty-seven years later, there seems to be a great number of experiments being done, and it's all using the same techniques that are rather supportive of the work that I did. I am not sure just how the question of the distinction between a virus transfer and a cellular transplant rides today. Maybe this distinction is less important with the prominence with which the virus concept of cancer has been established in recent years.

The business of titration of tumor cells involves the dilution of blood containing metastatic tumor cells which were taken from a bird when that bird was about half way through the fatal disease. We simply used techniques such as they use in microbiology and this got down to where we found some interesting things with reference to the difference between an infectious dose, an immunizing dose, and things like that.



*How did you enjoy working with Dr. De Ome under his tutelage?*

Very excellent! It always has been great. We've been very close over the years; in fact, he essentially lived with my mother and myself in the year 1949 after we had moved to Davis.

### **Personalities In Or Related To The Division Of Veterinary Science At Berkeley**

*You probably got to know many of the people then in the Division of Veterinary Science, and you have mentioned several of them. Who else did you get to know and what were your impressions of these people?*

I got to know Bill Boynton; I found him to be acceptable to discussion. I could talk to him. I remember entering his office one day and finding myself staring into a target pistol (a twenty-two gauge target pistol). He was merely sitting there at his desk dry shooting, target practicing, and he did this "click-click" for half of his lunch hour; that was all there was to it.

I got included in some of his autopsies because he never cared to kill an animal. He was one of those people who have a barrier towards killing an animal. There were many educational opportunities that I took advantage of because it didn't bother me. I would kill the animal and then he would go ahead and take over on the autopsy.

There were those days when we'd autopsy an African lion or something like that. These things usually appealed to Dr. Haring as being a rather flashy thing to do. They usually occurred on Saturday afternoon. Although exasperating at the time, these exercises proved useful and valuable studies of comparative pathology at later dates. I recall the African lion, five months of age, which had been maintained in the back yard of a resident of Berkeley. It was a household pet until it "went made." It could not be trusted and so was disposed of. We autopsied it and I macerated his skeleton as one of the first personal exercises in bone preparation for the study of anatomy. The bones fell apart. I couldn't understand this because the temperature and alkalinity had been kept very accurately and on the safe side. I compared notes with a skeleton preparer in the Life Sciences Building. He told me of a similar experience he had had with a wild cat pet that went berserk and had to be shot from the top of one of Berkeley's tallest eucalyptus trees. The skeleton of this cat also crumbled. In recent years it has been realized that a



carnivore does not live on meat alone. If it did, as these pets were fed, the animal would suffer from a phosphorous deficiency. Wild carnivores consume skeletons which give the phosphorous and calcium in the proper ratios.

*How did Dr. Haring impress you at that time?*

I was afraid of him; we didn't understand each other. As I learned more of his history I became more impressed with him.

*Did you know Jerry Beach?*

Yes, I had trouble with him--a very strange man; I found him to be a delightful person as an individual, but hell on wheels as a colleague. He was a great guy to be around socially, but someone to be away from as far as work was concerned. It was reported that a man who later left (William Hinshaw) said that when he came to the University of California, he came as far west as Davis, and would go no farther because J. R. Beach was in Berkeley. It was just hearsay, but after a while everything kind of fitted together.

*How about Jacob Traum?*

Delightful, but he wasn't very active. At least as far as I was concerned. I was very dissatisfied because he wasn't active enough. Periodically I could see some of the little flashbacks of activity: he would assume research statuses that he had daily held twenty years before. According to Dr. Hart, this was the case.

I got acquainted with Dr. Hart because I had been warned that if I came to Berkeley, he had a crazy research project and I should avoid it. I was told it was a research project that was supported by Swift and Company and there were various people interested in this research--it was administered funny--I would only be unhappy if I got involved in the project.

Well, inadvertently I became involved in the project; I'd forgotten what I had been told. It seems that there was some feeling that the involvement in this project was not a good thing for a young man because one person involved was Dr. George Hart.



In those days we had a sum of twenty thousand dollars from Swift and Company to study the three major causes of liver condemnation at inspection of cattle in the United States packing plants. They were abscesses, telangiectasis and something they called sawdust liver. At that time there was a great need for an epidemiologist to approach these conditions because we seemed to wind up in a national argument as to how related the three conditions were. There were two camps: one camp that said all three conditions are related with the same basic cause; and the other came that said all three are independent. I was invited to come to Davis to discuss our liver project with Dr. Hart.

It so happened that Dr. Hart was a nutritionist and had become impressed with some work that had been done in Colorado on the influence of vitamin A on liver abscission, sawdust production and telangiectasis. This work had shown that all three conditions were statistically related, so he assumed that their causes were related. He expounded to me on this idea which I simply rejected not because he was almighty Dr. Hart, but because they weren't related in San Francisco where we were studying them. In fact, I never have seen a case of sawdust liver. This was rather a shock. I understand that Dr. Hart had never been told by a young man that he didn't know about something that he had just expounded on. But, he later admitted that I was right. So that was how I traumatically got exposed to Dr. Hart.

*That was before you started coming to Davis regularly?*

Yes, that was in 1946-47.

### **Planning For The New School Of Veterinary Medicine**

*You were hearing a good deal about the school; did you have a hand in planning any school buildings at that stage? And were there other colleagues in addition to those you have mentioned?*

Well, I felt that I was a main planner at the time because it seemed to be the only thing I was doing for about the first year I was in the University. Being a very recent graduate of two months, some of the time people in my capacity found themselves in all sorts of meetings and committees merely because we had had the most recent experience with what was going on in a veterinary school. Other people found themselves doing a similar thing; there was a man by the name of Bill Maderius. (He's now in practice in the central part of the state.) He was with the University about two years and had come down here from Washington State the year before I did.



About the time I got started, Steward Madin returned to the University from the navy and he was in on this a lot, and he was a fairly recent graduate. There were a number of people who came and went during that period, but whose brains were tapped essentially for the same reason (that they were recent graduates). I just can't recall their names offhand; they're now working in various infectious disease laboratories throughout the country. There was a man by the name of Kissel but I really don't know what he is doing.

*And what did you do particularly?*

Well, I did a number of things. The first thing was to design the large animal barn facilities for the hospital which there's no evidence of now. It was a maneuver of Dr. Haring--sort of busy work--and so the decisions on how the barn should be built were left to people who were residents of Davis and we didn't have anything to do with it actually. He did that a lot; we would work our tails off on something and then he would turn it over to the people of Davis or some other area and take their word for everything, in spite of the fact that something had been well thought out by the group at Berkeley.

*Was the barn not built? I don't quite understand.*

No, the barn was built, but it wasn't built at all in the design pattern that had been planned before. It was a rather frustrating environment; it may have been due to the fact Haring at that time was seventy-two years old. The retirement age at the University was more in the order of what it is now, but Dr. Haring had put in extra time due to World War II.

However, C. M. Haring made great contributions to our veterinary school in California; one contribution was his attitude that veterinarians were concerned with every type of animal. I'm not sure that he expressed it exactly that way, but he was encouraging to me when I attempted to get a course in anatomy away from one dominating type of species. I attempted to get away from the domination of the horse and later I attempted to get away from the domination of the dog.

The *bas relief* sculpture over the front door of Haring Hall of a broad series of domestic species well illustrates this concept that veterinary medicine is concerned with a wide variety of species. Considering some developments in veterinary medicine (interest in zoo animals and experimental animals), the series could have been even larger.



I have been particularly interested in this sculpture because I feel that I was somewhat in on the ground floor of its development. I recall that as the school [at Davis] was being built, I was asked by C. M. Haring to go to a sculptor's home in Mill Valley. This was a man who worked for the University (O'Hanlon, I believe), who was an associate professor of architectural sculpture. He had prepared a model of the beautiful sculpture which now resides over our front door of Haring Hall. Unfortunately the electric lights that are built for this sculpture are never used. (The thing shows up all over the campus when they are on--it's really beautiful.) And when it does show, it is a series of animals of all kinds--a duck, a chicken, cow, everything. As I have said, this is a piece of C. M. Haring's philosophy, that veterinarians are not restricted to just one species.

*After Haring Hall was built, it was called a "marble palace"; it was also called the horse pentagon and all of these descriptive terms, I suppose, indicated that the rest of the campus thought it was a lot of money spent.*

Jealousy. Really petty jealousy by other segments of the campus.

*Can you recall any of this atmosphere at that time?*

It was rampant; it was every place you looked. Visiting cattlemen, at the current annual Beef Day, would walk through Haring Hall and make the comment, "It's kind of like the tail wagging the dog."

*What did they mean by that?*

Well, that veterinary science was wagging the dog of animal husbandry and, of course, I wasn't familiar then with arguments that have been perpetuated in foreign countries with this kind of competition. But, I would recall these things happening when I encountered them twenty some years later.

Then, there was just a lot of proving that had to be done. We were newcomers (those of us who moved up to Davis) and so we had some things to offer which nobody else believed in unless they could see them.



## The Move To Davis

*When did you actually move to Davis?*

Housing has always been difficult in Davis and I had a great deal of difficulty finding a house or finding a place to live (an apartment). I had a place in Berkeley which was sort of an enlarged bedroom (or rather two of them) which my mother very cleverly had converted into a kitchenette and a living room and we were essentially batching in this arrangement.

*Your mother did this on one of her trips to visit you?*

No, she was living with me. My mother and father were divorced when I was eighteen years old and my mother has made her home with me since then.

To answer your question--when did I move to Davis?--Berkeley was my home base until September, 1949. I was in Davis during the fall semester, 1948. I had a room in West Hall.

In talking about how I got a place to live in Davis, I remember a man on this campus by the name of Ira Smith [business manager, UC Davis]. He essentially ran the campus, and I remember being in Dr. Hart's office one day as he discussed with Delbert McKercher what plans he had made for a place for Dr. McKercher to live, in Davis, when he came from Cornell to accept a position as microbiologist. I had just been through another very tiring session with Ira Smith attempting to locate a place to live in Davis, so I called a rather spontaneous retort to Dr. Hart, something to the effect, "What the hell do you have to do to find a place to live in Davis, go to Cornell?" and he said, "No, I think not. I'll get Ira." And, sure enough, I wound up next door to Del McKercher. That's the way things worked in those days.

*Who was here from Cornell?*

You asked who was here from Cornell? These included Dr. Cameron, Dr. Haring, Dr. Traum and a number of younger persons. Among the young people, but hardly discouraged by the older members, was a holier-than-thou attitude concerning Cornell. There was only one way to do things (like it was done at Cornell). What made things worse and a little harder to swallow was the unconscious suspicion among the graduates of the "inferior" schools that possibly they were right.



At that time, Cornell may have been the best. In time these petty differences have been forgotten. They probably are remembered only because of the extremely irritating character that they exhibited during those formative days.

As I recall, Cornell did command a great deal of respect. In August of 1948, just before our first class started (September 15, 1948), the national AVMA meeting was held in San Francisco. The new school was causing considerable interest and comment from visiting dignitaries. The well-respected dean of the College of Veterinary Medicine at Cornell, Dean W. A. Hagan, commented as he left California to the effect that he was interested in the numerous innovations that we were going to attempt and that, although he was not confident that they would work, they should be tried. He pointed out that as a new school we had a unique opportunity to try something new.

### **Anatomy In The Curriculum**

I was asked the question of how anatomy should be taught in the school. I hadn't even thought of it up until that time, but I apparently had been thinking about it because I remember telling Dr. De Ome--who asked the original question--I thought anatomy should be taught from the standpoint of emphasis being placed on the generalizations of things that will not be forgotten easily, instead of the emphasis being placed on the detail that is automatically forgotten immediately. With that, a semi-decision was made and I was given the task of designing the course. And then when it came to designing the facilities, I indicated the things that ought to go into them, but the architect did the designing to place them properly. They did a marvelous job. You could just tell them what was needed for an area and they knew the best sequence of rooms and put it together.

*You're referring to the commercial architects?*

Yes, the commercial architects. And yet they were flexible enough that, if they made a big goof that could not be lived with, they would readily change it.

Now in the design of our anatomy course, Dr. De Ome and I, through discussions, designed the philosophy of the course. A great deal of this credit ought to go to De Ome because it was he who sat on the side lines and would constantly wag a finger if he thought I was getting off into too much detail and contradicting some of the other things I had been preaching about how anatomy should be taught. I was responsible for designing the laboratory procedure, and the methods for dissecting the sequence of animals.



## Anatomy Instruction

*Would you elaborate on your teaching duties at Davis?*

I assumed the responsibility for teaching the professional course in gross anatomy. I actually did the job of an associate professor because there had been an associate professor intended to be hired for the same job who did not take it.

*Why didn't he take it?*

He didn't like California. He liked Iowa better. J. R. Beach, in one of his attempts to get back at De Ome had persuaded Dr. Haring to hire an anatomist from Iowa to do the job I was preparing to do. If the person from Iowa had accepted the job, I would have been out, which was incidental. Graduate students were something you just played with like pawns. J. R. Beach would have had his revenge, not against me, but against De Ome. I would have just gone under as a side issue.

*Well then, as a graduate student still working for your doctoral degree, you were given the teaching responsibility of an associate professor in the field of anatomy. Was the way you taught that class innovative?*

I guess you'd call it that. Innovative is another one of these new terms that I don't particularly like.

*Had it ever been taught like that before?*

As far as I can figure, it probably had been taught in a similar fashion in the old German schools, because what I did in teaching anatomy was in direct reaction to what had been done to me in the discouraging task of attempting to learn some anatomy when I went through school. In those days, all anatomy was directed toward learning the anatomy of a type animal and the favorite type animal in the United States at that time was the horse (except at Cornell where it was the dog). Then the second job was to take information from this one species and show how it applied to the other species. So you then learned the special anatomy of cows and pigs and maybe a chicken and so on.



*This was by simultaneous dissection?*

No. This was classical. Now we are teaching anatomy and we attempt to get away from a type animal because I feel that you wind up with too much information about one species and it might be that the horse really isn't going to be the most important species. For 82% of our classes, it's the dog. On the other hand, you don't know but what a duck or a chicken might be important to you as an individual veterinarian.

So, as portrayed in the sculpturing by O'Hanlon over the front doors of Haring Hall, we have a variety of species and that was the way I intended to arrange the anatomy program. To make the work feasible, we arranged simultaneous dissections so that each student would be expected to do one dissection on one species, but could see the same area on all the species in the room. In this way, we got a great deal of work exposed to the students without killing them all.

*And yet, while using additional species of animals, you cut the time from the traditional two years to six months. How did you do that?*

Well, we did this by being sure that we could make generalizations--about a liver or other organs that would apply to any one of the seven species in the room--and in doing this we cut the material down. The shortening of time spent on anatomy in the curriculum was a matter of redistribution of time, making sure that anatomy came early in the curriculum. It came in a much more concentrated form and in one semester we did what other schools would have taken at least two semesters to do. We taught a ten-unit course (equivalent to fifteen quarter units).

So, as I found in the *Encyclopedia Britannica*, my lead remark for my lectures on liver is that the typical mammalian liver has two lobes. Now, you start with that and you show how there may be as many as seven in a dog, but there will be only two typically throughout the other animals. Essentially we have a pattern that is normal for a number of species which then, hopefully, the student can apply to any other species the he comes across, which again, is a factor, I think, in making our reform. of anatomy important. Some students found it applicable even to zoological species.

*Did you have some help in teaching the class?*

Help varied through the years. We started out with all the staff members in the veterinary school who came in and taught one section. In the first year, Dr. Howarth



taught the eye and the ear; later, Dr. Hage taught the ear. Dr. De Ome taught the respiratory system; Dr. Schalm, the digestive system. Then I attempted to find a colleague and there were several abortive attempts; but finally, in 1952, I acquired the assistance of Dr. Tyler. When we acquired Walt's help, then we essentially split the course in half.

We took the sections that interested us the most as individuals. He took the respiratory system which he later developed into a profitable research field. He did essentially the visceral, respiratory, digestive and genital systems; and I did the locomotor system and the central nervous system.

*In order to use this method, did you have to write a syllabus and lab manual?*

Yes.

*What was that about? How did you do that?*

The anatomy course that we developed involved seven species. At the first of the semester, until Christmas vacation, the systemic anatomy of five species was presented--the horse, cow, dog, pig and chicken. After Christmas vacation, in the two weeks remaining in the semester, we dissected the sheep and cat as a review of the total anatomy course and for the special anatomy of these two species. There is no single textbook that presents this information and so we gradually had to accumulate information, but as we accumulated it we had to make it available to the students. For the first few years we did this by extensive lectures--lectures lasting four hours at a crack. In 1951, I got the first edition of what later became known as the "Blue Book". This essentially started as a collection of material dealing with the locomotor system. It was extended to include visceral systems after the arrival of W. S. Tyler. There was no laboratory manual available which dealt with the dissection of more than one species at a time. At first this material was made available as mimeographed handouts. By about 1950, I had prepared the first edition of what became known as the "Yellow Book". Sections had been contributed by original participants in Vet Sci 120: O. W. Schalm, the digestive system; K. B. De Ome, the respiratory system, and J. A. Howarth, the eye, etc.

The information contained in the "Blue Book" came from a great number of texts and from personal experience, as we gained personal experience. Many of these texts were out of print or were foreign texts and were not readily available to veterinary students. The text (Blue Book) and the lab manual (Yellow Book) were printed by a man who was introduced to me by Dean Hart as the man who had done the most for undergraduate



education on the Davis campus. His name was Willis Berg and he was a retired University information officer who had established a second business as a free-lance editor and mimeographer. He would print our textbooks and then sell them to the book store. Many of the books which have originated from the Davis campus in hard cover form found their origins in mimeographed versions prepared by Mr. Berg. He often saw many books through publication by assisting the author in editing.

*Did other educational institutions buy them as well?*

They were made available, but I really don't know if others bought them. I think over the years we had a couple of occasions where interest was shown in the books, but the lab book encompassed a plan of simultaneous dissection that no other school used.

*This was a ten-unit course?*

Ten units (ten semester units). It would be the equivalent of fifteen quarter units--twenty-two contact hours per week (six three-hour laboratories and four one-hour lectures) and we got it done. And in a relatively short time. It was concentrated. This was an advantage because this was not the long exhaustive two years of information that would in turn get out of step with acquisition of other information. For instance, why should you wait four semesters to study one system of the animal which, hopefully, you were seeing clinically before that? So, this was the expression of our erstwhile attempt to concentrate the anatomy into a limited period of time.

It was interesting that we had successfully cut the total presentation of anatomy time-wise. I thought we were still doing a satisfactory job. I remember some rather anxious periods going through potential reactions of AVMA accreditation committees that were looking over the program. Fortunately, the first accreditation committee had a man (a real hellion) from Colorado who was a superior surgeon and had previously been a superior anatomist. His name was Dr. Farquaharson. The California system appealed to and satisfied him. I still remember explaining this program to Dr. Farquaharson and the other two members of the committee and then finding Dr. Farquaharson satisfied. How delighted we were.



*You have read a paper at the AVMA symposium on veterinary medicine on education at Michigan State; you were appointed to the FAO (Food and Agriculture Organization of the United Nations) on a panel on veterinary education; you read a paper in Rome on anatomy, with special reference to teaching anatomy which is now called the "California Approach"; you have received international as well as national recognition as an expert on veterinary education.*

*What I want to know is; first, what were your techniques in teaching? Before your syllabus was prepared, you said you had to use a lecture method. But, after you had all of the helps that you needed, how did you prepare your material?*

We worked a little bit more on the illustrative material and I have worked to develop a sizable collection of related extreme cases. Now I agree with the famous physiologist Bodil Schmidt-Nielson, who states that we learn by extremes and so you can teach basic principles and make them really click by showing the extreme examples. For instance, it is very difficult to forget that there are seven cervical vertebrae once you have seen the seven cervical vertebrae of the giraffe and I could show you those. So, we developed a museum approach.

*And this is by using your slides, primarily?*

Well, a few slides and a few actual demonstrations; in our teaching areas usually we've had space set up so that we could demonstrate either microscopic or gross specimens along with things that the students were seeing for themselves.

During this period we decided that we were ignoring a great deal of information merely because it was inconvenient to find it and because we simply didn't have conventional tools that approached the area of sub-gross anatomy (a term I coined in 1948).

*What does it mean?*

It refers to size (less than gross size but bigger than micro) and it's usually ignored because in light microscopy you usually start with at least sixty magnifications. Sub-gross anatomy can best be seen with about three or six magnifications, so if you use a dissection microscope, then there's much more to see. And you use methods like corrosion casts and so on.



*That leads to a question about the development of the corrosion technique and I wonder if you'd explain that a little more fully.*

I merely took advantage of the corrosion technique in applying it to veterinary medicine in starting our Department of Anatomy back in 1948. The corrosion technique is centuries old. There have been numerous techniques that have been named merely for the medium used to replace a bodily component. Now in most cases we replace blood, or we might replace the air in the air passages with a plastic. Then, by removing the tissue by caustic we have a corrosion cast left which gives us a duplicate or a replica of what was there. So, essentially the animal makes his own mold and you just push the plastic in. Then you knock it apart in the acid bath and come out with a specimen and the credit.

I fostered it a great deal. It was originated by other people, but I fostered it and applied it extensively to veterinary anatomy by utilizing inexpensive material such as polyvinyl alcohol purchased in fifty pound sacks rather than in sixteen dollar quart containers. Then, we could mix that up with two dollar per gallon acetone and make enough.

*When was the technique first used here?*

It dates back to about 1944; it was after the establishment of vinylite plastic that this new expression of the corrosion technique came out.

Before that, they used such things as wood, metal and celloidin, and all such things. About the time unbreakable records came out, we had vinylite (polyvinyl alcohol) and that's what we use in a 12% solution in acetone.

*In other words, you took the technique that you had read about in literatures and adapted it to your own purpose.*

Well, this was done by a man named Narat (and company) about 1944 and he applied this plastic, that could be readily colored, to the injection of animal specimens. So we merely did the same for domestic animals.



## My Graduate Students

*Please talk now about some of your graduate students.*

My first graduate student was Dr. W. S. Tyler; he completed his degree in comparative pathology with me, working on bovine achondroplasia and at the same time we were participating with Dr. Paul Gregory in developing our knowledge of this growth disorder in domestic cattle.

The same year (1956), a Dr. C. M. Barnes completed his degree with me; he was a major in the air corps who was stationed on the Berkeley and Davis campuses on one of those military arrangements--go get yourself a Ph.D., and be back by five o'clock.

In 1961, I had a national Chinese student, P. T. Lin, who was here for a master's degree. He worked on the respiratory system of the chicken. Barnes, by the way, worked on development of the reticuloendothelium system in the developing chick embryo. In 1962, I had a foreign graduate student; Dr. Patrick Rhatigan from Dublin, who received his master's degree; he worked on the alteration of the vertebral column in the bovine dwarf. Since the nervous system is not affected as much as the somatic tissues, the brain and spinal cord are not as diminished in size as are body tissues.

In 1965, Dr. T. A. Holliday, a veterinarian who graduated from our school in 1953, became my graduate student and did his thesis on hereditary muscular dystrophy. He also, as did all the preceding persons, obtained his degree in the area of Comparative Pathology.

In 1969, Dr. Mark Ratzlaff obtained his degree in anatomy. He was the first graduate student that I conducted in the then newly developed graduate field of anatomy, and his work was on the structural unit of the liver of the avian species.

In 1972, Dr. W. S. Parker, a practicing orthodontist, did a very fine thesis on the subject of skull development in dog breeds and related it to types of skull development in man. Dr. Parker took his degree in Comparative Pathology.

In 1974 and 1975, I had two graduate students for the master's degree: one was Geoffrey Chaffe who worked on a muscular, vascular problem that has occurred in turkeys; and the other was Louis Villalobos who worked on the development and quantitation of the gomeriulus of the turkey kidney.



## Marriage

*When were you married?*

In 1951. I was married one month before I got the Ph.D. degree. The previous December 4th, Dr. Jack Howarth had arranged a blind date for me with his sister, his charming sister. This seemed to be a very satisfactory arrangement.

*How long after that were you married?*

That was December 4. We were married on August 10, 1951

*Were you still getting paid three thousand a year, approximately?*

No, by 1951 when Delores and I were married I was getting paid \$5,100 (lecturer in veterinary medicine anatomy, later assistant professor) and I remember I previously got paid \$3,300 for a while, then \$3,900 for a while. Dr. Hart was a person whom you could speak to directly and, after I had started out my relationship with the man speaking so frankly and directly, we saw clearly that such should not be changed.

I recall that, when the man who had refused the associate professorship to teach the anatomy program in the new veterinary school and who had been offered \$6,600, I then asked Dr. Hart if the difference between \$3,300 and \$6,600 couldn't be sort of modulated; so, that is how I made \$3,900.

*You think that he was influenced at all in his choice of you in order to save some money?*

He might have been. It's very probably as I'm sure some of my colleagues have suggested.



## More On Anatomy

*How much did this teaching load delay your acquiring your Ph.D.?*

As I said, I got my Ph.D. in the fall of 1951.

*You'd have had it otherwise probably by when?*

Oh, probably at least one year earlier. The graduate degree in comparative pathology did not bear exhaustive requirements for course work. On the other hand, I did not have exhaustive preparation in course work. With the one year of preprofessional training I did not have elementary physics. This was required for the Ph.D., and so I had to take elementary physics the first year I was engaged in graduate work. As a full-time employee of the University of California I was restricted in the number of units I could enroll in (four). These are factors which also contributed to my delay in completing the graduate degree.

*Working this hard, did it affect your health?*

Later, it seems like something affected my health because in 1954 I came down with diabetes--ten years before my father came down with his case.

*Do you think it was related at all to this amount of work?*

I had to take this on the advice of Dr. Hart; it was his suggestion that my previous attitude and my inability not to let things worry me may have been expressed in this peculiar "nutritional" disease.

*Do you believe that?*

I don't know. I think I did let things worry me too much, undoubtedly, the resultant stress contributed to the diabetes.



*The fact that the accreditation committee of the AVMA approved this course, and the fact that it was relatively unique (certainly in the United States if not in Germany); did it make an impact on other schools of veterinary medicine or on this campus in terms of other curricula?*

I don't believe that the program made much of an impact on any veterinary school in the country. In fact, in the AVMA journal for the month of August, 1958, there is an editorial put out by an anatomist from Cornell (a man by the name of Habel). It's titled something about the crumbling cornerstone of anatomy or it is sort of a eulogy written to the subject of anatomy and it's called "The Crumbling Cornerstone" and it is an expression of his disbelief in what could be accomplished as we were accomplishing it. His main concern seemed to be the fact that we didn't have the students actually doing all of the dissections--but they were seeing the material, and they were getting the material.

It just so happened that at the same time his colleague (and rival), Dr. Howard Evans, was visiting me on sabbatical leave and we were in Davis, so it became appropriate for the AVMA to publish an editorial (a very poor word) on the ideas of teaching anatomy expressed by myself and by Howard Evans, and interpreted by Habel. Dr. Habel represents a rather traumatic example of how the California system of teaching veterinary anatomy was accepted by other schools.

*What are the circumstances today in schools of veterinary medicine in terms of teaching anatomy?*

It seems that, from what is happening in my home environment, I see attempts to essentially get back to doing what was being done thirty years ago. In 1965, I did a survey on what species were being taught in the schools in the United States; that survey showed that every school taught the chicken, and now there are at least six schools that do not.

All during the years of the development of this idea, there was always the person who said "Poultry is not important because I don't know one veterinarian that spends 100% of his time on poultry." Now, the same idiot could find that there are as many as 300 veterinarians spending some portion of their time working with poultry.

That attitude has been harmful in preventing veterinary medicine from being expressed on as broad a basis as it should be.



*I'm not quite clear when you said that today they've gone back to what you were doing thirty years ago?*

They are back to what I was trying to avoid.

*To the old traditional way?*

Yes, right . . . getting back to the over-emphasis of a single species (which comes with the use of a type animal). One thing that is encouraging is occurring in some areas in this country. Everybody is using a type animal. In most cases it's the dog (with very good reason), but they have been able to use the cow in some cases and the cow is actually one of the more important animals. Again, this is probably going to change in two more years. These things cycle.

Arguments persist for the use of a type animal and persist for the use of a particular animal as the type animal. Dogs are small, easy to dissect, generalized in their structure, and frequently encountered in veterinary practice. Cattle are the most important animals from an agricultural standpoint. But cows come big, and expensive. I still firmly believe that the salvation of veterinary anatomy is a presentation of the typical structure of a typical animal with the addition of comparative details. This approach was known as transcendental anatomy 100 years ago,

## Curriculum Improvement

*Dr. Julian, I think it was following the evaluation committee meeting of the AVMA, in 1951, that some suggestions were made about curriculum and who should teach what. Do you recall the discussion?*

Yes. I don't recall exactly the position of the AVMA committee in this kind of discussion. I know for a number of years they were concerned that histology was not taught in the veterinary school.

Let me retract what I do remember of the situation as of '51. There was a lot of concern about two areas of teaching: one was physiology. The Veterinary School had been instructed to forget it because it was going to be taught by the people in animal science to our veterinary students. Another areas I believe, was parasitology. As I see it, we hired Douglas to teach parasitology in our school and that was taken care of very nicely. That left physiology being taught in the animal science department.



And, in those days, as I said earlier, the ideas of teaching in veterinary schools came from our own naive experiences of what was happening in other schools. In those days most departments of pathology taught histology or microscopic anatomy, and that seemed logical because it was the most practical thing to do since the pathologist was the man who apparently used histology the most.

We could argue this point, and it was extremely naive to think that pathology was the only science that utilized microscopic anatomy, and that it relegated microscopic anatomy into a relatively unimportant position. It actually is important to all the pre-clinical sciences. So, at that time we taught histology with pathology. Now the idea of teaching it in a pathology department was not unique to the School of Veterinary Medicine here; it was done in other schools as I have said. What was unique was an idea of Dr. De Om's that was an attempt to prevent the students from thinking in terms of absolutely normal versus absolutely abnormal (thinking in terms of black versus white). What is normal? That is a question that Ken [De Ome] often used with me in those days, and frequently it was obvious that it was extremely difficult to define. So, in his attempt to teach the gradual transition between normal and abnormal, they decided to teach histology with pathology as a truly integrated course.

This was never done. Histology was taught with microscopic pathology in the same time period, but never as an integrated course. People think that it was, and so they say, "Look at that idea that failed." but it was never tried.

Anyway, there was some dissatisfaction among members of the staff about having histology taught with the pathology group. In fact, the pathology people decided it would be a very good idea if the anatomy people would take it over. But then about the same time, in 1951 I believe, the College of Letters and Science enrolled its first classes, and all departments of letters and science started scratching for students. They had to fill up rooms with bodies to make departments and to preserve departments.

So, the fact that there was a microscopic anatomy course in the zoology department gave some people the idea that our veterinary students should take that course because everybody knows that microscopic anatomy is microscopic anatomy; it doesn't matter what it is of.

There was much pork-barreling going on about that time because the veterinary school, all of a sudden, became aware of the opportunity to acquire physiology as a teaching responsibility. Dr. S. A. Peoples was very desirous of this change that our students would no longer take A.H. 110, and so, as I say, some pork-barreling went on. Essentially, histology was traded to the College of Letters and Science for physiology coming out of the Department of Animal Science. It has no rhyme or reason, from the surface of things; except, if you know who was sleeping with whom at the time, it does make sense.



For instance, there was an investigation on the teaching of veterinary histology and why it should be taught in the veterinary school versus why it should be taught in the zoology department. And this investigation was conducted by no less than the curriculum committee of the Academic Senate. I was invited to write a paragraph or two as to why I thought histology should be taught in our anatomy group. I was never invited to that committee to meet with them or to discuss it. They did invite Dr. Lauren Rosenberg [Department of Zoology] who simply said that "Yes" he had discussed this with me and had read my report, and it wouldn't work. And, so the decision was made and was not corrected until 1963 or '64.

In the meantime, every two years there was our annual survey by the national committees on accreditation. They were constantly after us because we didn't teach histology. Well, we also didn't teach embryology, and at that time the zoology department had a very excellent course in embryology--morphological embryology--and I didn't even want to attempt to compete with them. It was Dr. [Milton] Hildebrand's course, a very superior course, and we could only come out as second best. So, we just made the best of the situation as it stood; but, by the time Dr. Pritchard came here letters and science was rather full and they were losing interest in the area of histology. In fact, right now (today) histology has been discontinued in the zoology department [with the retirement of Dr. Rosenberg].

*Do faculty preferences influence curriculum development?*

It depends on people. They had people that were not interested in morphology, and the people that had been interested in morphology have become interested in other aspects of morphology. The whole area of embryology has shifted. I looked through an embryology book the other day and I wouldn't recognize embryology; it was interesting stuff, but the morphological aspect of embryology just wasn't there. The kind of thing that used to be pointed out to you when you were a medical student as the reason why you took it (why you took it for medical school) just wasn't there.

*I've been told that the school was asked in 1962 to establish a program of avian anatomy. Was that ever done?*

There was a laboratory established about 1940 for the study of avian leucotic diseases (avian leucosis) and this was back at East Lansing, Michigan in the regional poultry laboratory, and they made great progress in studying the causation of these cancer producing viruses. But, they had a rather limited defined goal and they acquired a man who was a morphologist. His name was Al Lukas and he produced a beautiful book



on avian hematology, a gorgeous thing, which was perfectly logical because it's the hematological system that becomes leucotic, so that would be legitimate for him to do.

Then he decided that he wanted to do other books on avian anatomy and there was some question as to whether these would legitimately meet the definition of the original establishment of the laboratory. So, I asked Al if there was any possibility of his laboratory being moved, or his segment of the laboratory being moved to the Davis campus. I thought it would be an excellent opportunity. We had a number of morphologists that were not horrified by the avian species, which he did not have back at East Lansing where all the people are hair oriented. We had liaison at UCD with a number of people in the avian sciences department, so we could get all kinds of specimens and all the kinds of interests that were blooming into morphological interests. So I thought this was a logical procedure, and we took it through university channels, and got it all approved and took it back to Washington, D.C., and proposed the change to the federal government.

In the meantime, East Lansing became aware of this maneuver and they made a number of changes which were all for the benefit of Al's project. So, although we failed in getting the project in California, we succeeded mightily in supporting and getting the project extended.

Unfortunately, the project is now dead. This, I don't think, would have happened here because we would have fashioned a replacement for Dr. Lukas upon his retirement, and we would also, probably, have succeeded in getting Dr. Lukas to have been a bit more productive. He was a productive man, a hard-working fellow, but he has turned out a two-volume, mammoth thing--it must weigh fifteen pounds--on the integumentary system of birds. And now the project stops, and so there's nothing, and we'll have to wait another thirty years until some other avian anatomy project starts up before we ever get around to muscles and vessels and nerves and guts. Maybe, hopefully, next time we'll start with the most important systems and then go to the less important systems. Start with the guts and the respiratory system, and the reproductive system.

There is an example of the potential of gross anatomy. Those three systems, really, we're screaming to have something half as complete as Al Lukas made, just half as complete, on those three systems.



## Modern Concepts

*Are you satisfied with the present core track program and the organ systems concept?*

There is one worry about this core track program, and this centers back to that sculpturing over the front door of Haring Hall. In my estimation, I would define a veterinarian as Dr. Haring was defining him. A veterinarian should be an extremely broad person, and I can foresee nothing but narrowing from a track program. Now maybe there's a segment that would be appropriate. I don't think that if it really takes hold there will be the flexibility in veterinary medicine because individuals, with a basic broad training, can do a variety of things. I'm afraid that we're going to be fashioned a little bit too much like our physician brothers--becoming too highly specialized. Otherwise, the idea of collaboration or integration would be terrific. That's what we were trying to do all the time, for twenty-five years. We didn't get very far with it, but we tried integration. We tried that with every department in the basic science field until, I remember, the microbiologist (a man long since gone) who, after he heard about our plans for integration, said, "That's great, until you come to microbiology, then forget it. I'll do that." These things (departments and disciplines) are made up of people.

*Would you recommend increasing the credits required to become a DVM?  
Increasing the number of subjects studied in the curriculum?*

I don't think so.

*Would you shorten the curriculum?*

No, I wouldn't shorten it or lengthen it. I think we spend enough time as it is. I would question the forced lengthening of the pre-veterinarian curriculum. Two years ought to be enough.

There's an interesting thing here; no one will believe it, and they probably won't think about it in time. But, to me, one year would be much more important to apply after the basic DVM than it would before. We have now a three-year pre-vet program. All right, take out one year, save it, then you have a two-year pre-vet program. At the end of our senior year, have it then; have some time then when people know all about



veterinary medicine and can decide where to concentrate. This new program might do that. In the track program it just might do that, just possibly, but I don't know. We'll see.

*You don't feel the need, then, for another year of internship?*

No, because the internship is . . . well, what does it do? It's all clinical.

*And they're getting that in their senior year?*

Yes. In their senior year that's built in. Actually, I suspect that some of these people that do go into an internship just do it because they're undecided.

*Is problem solving the most important single ability that a graduate doctor of veterinary medicine can have?*

Now refresh me, what do you mean by problem solving?

*To a clinician, I suppose it would mean diagnosis above all?*

Well, I ask this because these words come into expressions of a new veterinary medicine. The old veterinary medicine has the fire engine approach to veterinary medicine--taking care of the immediate problem and that sort of thing--as compared to long range sort of things that we've seen in the food-animal preparation type.

Really, what a veterinarian is isn't hard to define. But it would still be difficult for me to define because I've known veterinarians and they do everything. That's why I don't like these track programs. They're defining the veterinary profession too narrowly, I think. When I look at what veterinarians have done for university education. Just looking at the University of California--look how much microbiology was taught, and by whom in the early years on the Berkeley campus: C. M. Haring, K. F. Meyer. Look at how much K. F. Meyer [a veterinarian] taught pathology and how many years and how long. Look on this campus. There is [Chester] Roadhouse, George Hart. Roadhouse came out of Berkeley from Vet sci . . . .



*He was a veterinarian?*

Yes, he came up here and became a "milkologist" because they needed it. George Hart did the same thing. He came up here and became an animal husbandryman and then went a little deeper and decided what animal husbandry needed, and so he got Paul Gregory, Max Kleiber, Harold Cole and some of these people to do it. This is the kind of thing that has been happening internationally.

I was interested when I was a member of the FAO group on veterinary education. Ursula Abbott's husband--you know Ursula's in Avian Science--her husband is an economist for FAO, and so while I was in Rome I went to his office and visited him. Ursula had mentioned that the veterinarians were getting into the agricultural economists' hair in various countries (under-developed countries) and so I wanted to find out about that. I asked Dr. Abbott, "Ursula tells me that veterinarians are getting in you 'guys' hair, and how come?"

Well, what it was was that in the development of an agricultural industry, there comes a phase when you need agricultural economists. You don't need a whole lot of them right away, but you need the application of a rudiment of agricultural economics. All right, what do you do? You look around and see what you've got. Well, you've got a veterinarian, and he does it because all it takes is reasonable intelligence and knowing something about production and cost, and that's what veterinary medicine is all about--how to make an animal profitable. And so they did it. Well then when industry developed far enough that it merited its own school of agricultural economics, or at least its own cadre of agricultural economists, then the veterinarians were jealous because they were having something taken away from them which they had developed. That was just twelve years ago that I learned that.

But how flexible the veterinary training could be, has been, and I think should stay!

*What is your opinion on the use of paramedics in veterinary medicine?*

I think you will find many more people more qualified than I who might give a suggestion and an answer here, but I visualize one problem in all of these things and that is the inherent jealousy of the veterinarians and the possibly inherent stupidity of some of the paramedics who think all of a sudden they know as much as "Doc" does and so they think they can do everything. And there is the inherent difficulty of the vets who will just be jealous of what the paramedics can do. If the job services can be well defined in terms of the overall performance so that more service goes to the public, then I think it would be great.



*How influential within the school is the AVMA and the CVMA?*

I talked to Chancellor Freeborn about this when we were constantly criticized for not teaching histology and he has told me that I should understand that organized professional groups are not particularly influential in the University of California. At that time there was some trouble going on between an AMA organization and the San Francisco campus. So, I don't think there is the influence that these professional groups would like to see. I don't think that there is the influence that undoubtedly exists in some of the midwestern schools. I've seen them come here and try to shake their muscles around and see nothing.

*Are there still some subjects that are neglected in the curriculum?*

When our curriculum started there were two subjects that were neglected; one was wildlife and one was public health. Now I think public health is all right and I think that wildlife has recently become all right. And, it wasn't the wildlife as I visualized from my experience in Washington--the fur bearing wildlife. It's more the exotic zoo animal type. I don't know, I think we have a pretty good coverage now.

Again, I will harken back to the sculpturing over the front door, and ask, "Do we have preparation in the basic field sufficiently broad to permit the veterinarian to contribute to new areas of application of veterinary science?" Too often, in the past, the narrow, prosaic orientation of veterinarians has prevented them from foreseeing their application to new things. Artificial insemination is an example of an area which got off to a very slow start and still does not have the full impact of veterinary service because we were asleep at the switch.

Again, that's the advantage of preparing flexible people because if you find that there is something that you ought to be doing, ought to be knowing, ten years from now, then to have a group of fertile minds to turn this loose is the thing to do.

*You were talking about ag economics and veterinarians. What's your opinion of the so-called poodle economy versus livestock care?*

They both serve mankind, and aside from the consideration of who pays for what, the poodle economy is an extremely important thing--becoming more important every day--as we get more and more older people. And so it can't be ignored, it shouldn't be.



It is as disgraceful to ignore that as it would be to ignore some preventable infectious disease of sheep, because these animals are very important to people, and yet we see so much misery caused by lack of consideration of them.

*From your own observation, do you feel that the regulatory people--the state and federal sanitary boards and so on--are politically appointed or are they well qualified?*

No, I think they're more qualified. I don't know about every state, I don't know exactly how this is handled, but I've had some graduates in the state programs and I've been very proud of what they've done and they've been very well qualified. I think these must be nonpolitical appointments, except at a certain height.

The main trouble with veterinary service, for instance in the state of California--at least there was a time--is that you couldn't go any higher than let's say pay equivalent to that of an associate professor in the University of California without getting into the big appointment jobs.

*What about the effectiveness of the regulation? I read that one state spent ten million dollars on brucellosis control, and ten years later conditions were worse than they ever had been.*

Well now, how were they worse?

*There was more brucellosis in cattle.*

One difficulty we have with these regulatory conditions is that you have a devastating disease that's just raising hell with us. We clean it all up and it takes a lot of money to hire a lot of people to keep it clean. So at the end of the year, here's this big budget sheet that comes through, we've got four cases of t.b. and here we have these thousands of animals that have been tested. People will say, "Why do we have to spend all that money for four lousy reactors?" Well, if you didn't take those four lousy reactors, five years from now there would be seventy reactors, or seven hundred. So, there's some of that, and also a shift in the economy of the state and the movement of animals.

California was slow about making laws against brucellosis, so Oregon dumped all its brucella cattle into northern California; that might be a cause, I wouldn't damn veterinary medicine for the few instances of that kind.



## Department Administration

*The Department of Anatomy was unofficial until about 1960. You were, I presume, the unofficial chairman of the department, and then when it became official, you were officially chairman? How long did you remain as the chairman?*

Five years.

*What were some of your major problems in that period?*

Well, on looking back on it, we were coming into another phase. We had established a department. We had established the rudiments of our teaching program. We had established the teaching methodology and it had been proved. Then, as I foresaw, it was important to us to establish a research program.

By 1960, or thereabouts, this had been pretty well established. We had individual research programs, and we had some cooperative research programs. As it proved out, it was then time to go back and concentrate on the teaching program again, re-evaluating it because, for instance, whereas we had cut much time out of the anatomy presentation in the first years that we taught it as compared to other schools, other schools were catching up with us. And now cutting more wasn't necessarily the answer. But these changes had been made elsewhere and we hadn't been making any (or very many). Those are the changes that I think were at least in the wind.

And then, of course, remember that 1964 was the ill-fated year of Mario Savio. He had a tremendous impact on the University of California, and I think we're just beginning to shake off some of the stupidity that resulted. So everything then, you see, beginning in 1964, went student-oriented and, well, you recall the hassle . . .

## Research Activity And Philosophy

*Were you also responsible for research in anatomy during the early period of the school?*



I really didn't get to do a great deal of research except I did it because I was just interested in it. But then, when I got some help in the teaching--when Dr. [Walter S.] Tyler came--then I thought it was time to establish a research program. We had established a teaching program.

It should be recalled that in those days service in the Agricultural Experiment Station was distributed indistinguishably among all members of what later became known as the Division of Agricultural Sciences. If you were a member of a department or a school within that division, you automatically had a research title associated with the Experiment Station. This was a headache for pencil-pushing officialdom of the federal government, but it was a very unique and profitable arrangement. I was the first, and at that time (from 1951 on) the only, anatomist in the Experiment Station. This in itself was an encouragement for research. To answer the question "What can an anatomist do for the problems of animal agriculture?" aided me greatly in visualizing the potentiality of research in the field.

During this time it was through our cooperation with some of the people whom we have discussed before (particularly one person that Dr. Hart had brought to this campus to formulate animal science, Dr. Paul Gregory, who was a geneticist) that research progress was made. In 1951, Paul started to become aware that some Hereford cattle were not as big as they should be; they were dwarfed. In fact, in 1951, *Life Magazine* came out with a photograph (I think they called the section "Letters to the Editor" or "Photos to the Editor" in which some carnival operator showed two tiny dwarfed Hereford animals that he had found in a secret valley and, of course, this went over big and it made the carnival rich. Two weeks later a farmer wrote in and essentially said, "The hell they are. Those are animals that I sold to that character for twenty-five dollars a head," and then it was out of the bag.

In the Hereford industry and in all beef cattle industries, there was a real problem, and they were actually having as much as a sixth of their calf crops that were being born achondroplastic dwarfs. Dr. Tyler and I established the diagnosis of achondroplasia and he got his Ph.D. thesis out of the way in so doing. Then, soon after that, in 1956, I started working with Dr. Vigfus Asmundson. What Paul Gregory was to animal science Asmundson was to avian science. He was a very successful geneticist working in the poultry department. He brought me two chickens and said these are produced in Riverside County and asked, "Why is it that when they're lying on their backs they can't roll over, they can't get up? Why is it that when they lie on their backs, they flip and flop and can't get up?"

Well, I said, 'I don't know, but I'll try to find out.' This has developed into a very interesting case of hereditary muscular dystrophy and since 1956 I've been working, with the late Dr. Asmundson on muscular dystrophy.



*This became one of your major areas of research--dwarfism?*

Yes, these were major areas of research interest. When you think of it they fit into my teaching responsibilities pretty well. I was responsible for the locomotor system (muscles and bones and things); dwarfism (achondroplasia) is basically a disease of bone and muscular dystrophy is (presumably) an intrinsic disease of skeletal muscles. Recently I have attempted to summarize my research interests and to formulate plans for the future. I find that they center in the areas of bone and muscles and the diseases of each. They may specifically bear upon osteoporosis and hip dysplasia of dogs, but they can all be traced to interests that were developed from the work on dwarfism of cattle and hereditary muscular dystrophy of the chicken in the 1950s.

*In talking about the various areas of your research, I noticed as of 1959, according to your bibliography, you had forty research papers in eight different study categories including prostate, radioactive isotopes and neoplasms, muscular dystrophy, the liver function and structure, and corrosion cast preparations. Would you recommend this wide range?*

I have mixed feelings on this question. For a person who wishes to make his name in an area, I would not recommend this approach because, with this approach, you wind up a sort of jack-of-all-trades and specialist in none. In some instances it is preferable to be classifiable, to have a bibliography of sufficiently limited scope that administrators find no difficulty in classifying the individual as a representative of one of the readily identifiable disciplines. They look at a bibliography that contains eight categories under which a person could be classified, and that throws them. If they look at a bibliography in which they can classify a person under one simple category, then they are happy.

On the other hand, I don't think I would change too much because this was just the way I was put together. It's only in the last three years, due to the pressure of circumstances, that I have truly had to cut back my interests and they are still reasonably broad, involving the skeletal and muscular systems.

The most profitable area of research, I feel, has been the work on muscular dystrophy. Up until 1955, there were no experimental animals that bore a hereditary disease of skeletal muscles.

There had been a few reports of some things that were similar to a few types of muscular dystrophy. Around 1930, a family of goats had been described that were myotonic, but there were none that were at all similar to the most common form of muscular dystrophy--the kind that the little child has as pictured on the annual cardboard requests for contributions that we see in all the drugstores, the so-called Duchenne type.



In 1955, some people found a mouse that had a hereditary muscular dystrophy that had some resemblances to the more destructive types of muscular dystrophy in man. In 1956, Dr. Asmundson and I reported hereditary muscular dystrophy in the chicken. We referred to this as a hereditary muscular abnormality, but in our paper suggested that it resembled some of the characteristics of the more common forms of muscular dystrophy in man. Since then, in 1962, a hamster has been described. So currently there are three experimental animals that bear hereditary muscular dystrophy and are useful for muscular dystrophy research; the mouse, the chicken, and the hamster.

There has been considerable confusion--or concern--among researchers as to what is a suitable experimental animal for muscular dystrophy research. Up until 1955, most muscular dystrophy research was done with sick muscles of animals that had been starved for vitamin E (they were vitamin E deficient animals). Vitamin E deficiency in most species produces a destructive lesion of muscles and so, in studying this form of sick muscles, the rationale was that we are doing the best we can to study sick muscles of an unknown cause in the form of muscular dystrophy by studying this sick muscle of a known cause.

Then, after 1955, the entire area got a bit of a shot in the arm with the experimental animals that became available. but there has been confusion as to the appropriateness of experimental animals. Not only has there been the general reluctance of medically oriented people (M. D.'s, I mean) who feel that nothing is true that doesn't occur in a two-legged species by the name of man (this dominates most M.D. attitudes). There has been much concern that a thing like a chicken is so far removed from a perfectly valid mammal (like a man) that it could not possibly contribute any significance to an understanding of man's diseases.

Well, it all boils down to how you define an experimental animal. And if you choose a definition which includes any animal--an experimental animal is any animal that has something to contribute to the objectives of the medical researcher's research--then we can buy the chicken or the hamster or the mouse, whatever. We merely have to know what their disease processes have to offer, especially those features which are common to the disease as we see it in man. Now we have stated in our publications, many times, that none of the experimental forms of muscular dystrophy is exact mirror images of muscular dystrophy in man, but all contain some aspects that do resemble characteristics of the disease as it is found in man.

In the case of muscular dystrophy in the chicken, it is the mildest form of muscular dystrophy of the three types. In fact, we don't even know what kills the chickens. If the muscular dystrophy ever does, it probably does purely accidentally. When the chicken falls over on his back, the muscular dystrophy fails to permit it to arise again, and the bird dies of respiratory distress. Of course in man, most of those people die of respiratory distress, too, but it's a little different form. It's due to weakening of the chest cavity, and then results in pneumonia.



The dystrophy of chickens does have a process that is found in a high percentage of dystrophy of man--not all cases, but a high percentage, and this is so-called pseudohypertrophy. It means false hypertrophy of the muscles (they enlarge). Now in a child, when he has enlarged muscles, this makes the father very proud and everything is just fine until the little kid can't get up off the floor, or acts very clumsy. Then he is taken to the doctor to find out why such a muscular child should be so clumsy. Then, if they take a small piece of that muscle and look at it under the microscope, they see that there's no muscle there at all; it's all been replaced by fat. So, they say, "Well, that isn't muscle, and that wasn't hypotrophy or enlargement of muscle; that was pseudohypertrophy (false hypertrophy) due to the replacement by fat."

Actually, we found that in the process of pseudohypertrophy, enlargement of the muscle does occur first and then is replaced by fat.

*About the negative response of the M.D. to other creatures than man as an animal for research studies, is there not sufficient evidence of the value of using animals, for example, horses for emphysema, or chickens for leukemia?*

Yes, but all of these applications have been attended with reaction, as irrational as it seems. For instance, some man wrote an essay asking why it was that it took Francis Peyton Rous almost sixty years to get the Nobel Prize for the study of virus-induced leukemia, and it was simply because he had studied virus-induced leukemia in chickens--and chickens couldn't be anything like a man, So, work that was done in 1913 was finally approved for the Nobel Prize in 1960--at least fifty years later.

There is this reaction, I think, especially from medical personnel who either have come from an institution which is not foremost in research and the techniques of research, or just have suffered from the perfectly understandable reaction that man is fashioned as God and that sort of thing, so he is distinctive from animal species. That all kind of ties together with fundamentalist religion, if you want, to every day live-a-life medicine.



*What are the primary objectives of veterinary medical research?*

There have been attempts to define these, and the University of California has attempted some definitions since the arrival of Dean Pritchard.

Currently the thoughts have been that veterinary medical research's primary duty is research on the diseases or abnormalities of domestic species. Now this has been extended somewhat to include all species of animals, and in extending it, there has come the realization in this decade that the veterinarian is probably the most knowledgeable person about structure and function of "experimental" animals--guinea pigs, rabbits, and the susceptible small rodent type mammals that are used for experimentation (dogs too, of course).

So, a big shot in the arm to veterinary research has come recently from the general appreciation that the veterinarian can contribute to a research team by contribution of knowledge dealing with animals other than man, and that animals might be used for experimental beasts. Since I've been in this business (since 1956) of trying to sell the chicken to a very mammal-oriented group of people, and then later getting involved in the attempts to sell the horse as an experimental animal for emphysema research, these things have come rather close to home.

*Would the secondary objective of veterinary medical research be to increase the ability of the practicing D.V.M. to make diagnoses and to do preventive medicine?*

Well, I think that would have all been covered hastily in my first sentence because that has been kind of classically the definition. And also, in veterinary medicine infectious diseases are based (microbiology, immunology, and so on) have been most important to us. This is because, in the average population that we handle is young and susceptible to infectious diseases. Most cattle are killed before they are three years old, and chickens, eleven weeks; yet, they have time to get some infectious diseases but not much time for even neoplastic diseases. So, whereas degenerative disease is the forte of human medicine, infectious disease is the forte of veterinary medicine, just because of the populations that we handle.

What old animals do the veterinarians handle? Well, the occasional dog, yes--a companion animal; and the occasional horse, and that's about it--unless a romantic rancher has a special Longhorn beast that he particularly likes.



*Who is, in your opinion, doing the best research; government agencies, industry, or educational institutions?*

I think a question like that should be presented topically, like who is doing the best research on what. And then that boils down to the individuals that you've got. So then you find out who they are, I don't think there's any special vested interest in any one avenue or type of research. The trouble with many of the official institute-like affairs is that their approaches are not liberal enough. They are, by definition, institutions dealing with cancers of chickens, let's say, and they don't have the latitude or permission to investigate other things that are really quite obvious for investigation. Whereas, in a more objective environment, like a well-organized university, you do have this opportunity of doing what comes naturally occasionally when the opportunity is offered.

I think that my research career reflects a lot of opportunism in that sort of philosophy. When there was something to be done, and I felt that I could contribute to it, I did.

### **Cooperative Research Projects**

*Of the research projects that were cooperative, what were some of the major ones?*

Well, what I mean by cooperative is that they were broader than our department and we merely contributed a segment to them. One was the muscular dystrophy project which was an extensive project, originally supported at some 38,000 per year by the NIH, but administered out of the poultry science department. We contributed morphology to the genetic work and biochemical work that they were doing-- cooperative work.

The work with Paul Gregory was an example of a cooperative venture between our department and his department. He contributed the animals and we processed them. We then measured them or whatever had to be done to get the data that we needed to understand something about achondroplasia, and made the collection (which is still a worthwhile collection) for other uses.

About this time I received a phone call from a navy hospital in Oakland and they wanted to see me so they came up and a man, a Dr. Canada, explained to me that he was interested in emphysema and that there were people in the Bay Area who were interested in the possibility of emphysema being due to a deficiency of blood supply from the bronchial artery. They wanted to know what would be a satisfactory experimental



animal to use. Well, knowing their interest, I called Dr. Tyler who was interested in the lung into the room--it was a part of his teaching assignment for our anatomy course--and we decided that the best thing for the navy to do was to find out what was the most satisfactory animal, which they did. And Dr. Tyler and Dr. McLaughlin and Dr. Canada have a paper out that points out that the lung of the horse most closely resembles the lung of man in a number of subgross ways. It also happens that the horse does have a natural emphysema, but the horse doesn't smoke!

These were in the rather rich days of NIH, and so they weren't overly reluctant to accept the horse as an experimental animal. They were rather reluctant, though, because it wasn't a mouse or a rat or something conventional--the same problem, you see, all the way through. But they did accept it and Walt [Tyler] had that project going for I think about six years. I ran it for one year when he went to England on a sabbatical leave. So that was a cooperative project which involved this campus and members of the campus of San Francisco as well as an outside group.

Then I had a project which was a cooperative project with another member of the navy, Dr. Ralph Brawer, he was interested in how liver functions developed. He thought that maybe these could best be studied in an animal in which we could get at the liver at an early age, so why not the chick embryo? I knew a technique by which a radioactive dye could be injected intravenously and so we put my little technical knowledge with his academic knowledge and we worked on that liver for a number of years. This stemmed from a previous interest in bovine liver which we discussed.

*Has there been any work jointly with the human med school here on campus?*

Our relations with the human med school, as I see it, are developing on a one-to-ones person-to-person basis. When someone in our school finds someone in their school or vice versa with a common interest, they'll get together.

I have had one major activity with them. They have brought to this campus a number of people who are interested in muscular dystrophy or muscular diseases. And, since this campus is the home of one of the experimental models of muscular dystrophy, we formulated what we call the muscle group which conducts seminars and enters into cooperative projects and that sort of thing. Currently I'm working with a group headed

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Logan M. Julian



up by Dr. William Fowler of the Department of Physical Medicine and Rehabilitation, actually using the materials which I had collected over the years with Dr. Asmundson.

*Thank you for your absorbing recollections.*



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## Paul D. DeLay

### Interviewer's Notes:

These interviews were conducted by A.I. Dickman in 1974.

### Curriculum Vitae:

Paul Delay retired at an administrator with the U.S.D.A. in the early 1970's. He was associated with the original group of veterinary medicine researchers in Berkeley whose discussions formed the academic and administrative basis for the School of Veterinary Medicine at UCD.



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## Paul D. DeLay

I'm Paul D. DeLay. I'm currently living north of Santa Rosa at 3580 Stallion Drive. We've moved there recently and purchased a little land in the woods between Santa Rosa and Calistoga and had a house built on it. I'm just getting nicely settled in there. I retired as an assistant administrator of the U.S. Research Service in Washington, after having served as a director of the Animal Disease and Parasite Research Division for a few years in Washington.

*Was that connected with USDA?*

That is correct--with the research service of the USDA. Since retirement, I have returned on an intermittent type of appointment to complete data and prepare them for publication. These are data that were developed prior to going to Washington, while I was working at the Plum Island Animal Disease Laboratory located out in the Sound about a hundred and twenty-three miles north of New York City. The Laboratory was designed to develop competency on the part of scientists in the United States on the characteristics of many of the foreign animal viruses that do not occur in the United States. I'm working on four of five manuscripts now which will include data on these viruses which have not yet been published.

*You were one of those who were in Berkeley at the time of the discussions about the creation of a School of Veterinary Medicine, weren't you?*

Yes, that's correct. I came to Berkeley shortly after World War II. Plans were being discussed and, I believe, tentative arrangements made to acquire the tract of land--the name was the Gill tract--in Albany as a possible site for the School of Veterinary Medicine for the state of California.

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Paul D. DeLay



*Who were some of those people with whom you were associated?*

The veterinary science research group when I came to Berkeley was headed by Dr. Clarence M. Haring. On the staff was Dr. Jerry Beach, Jacob Traum, William Boynton, Kenneth De Ome, Oscar Schalm, Werner Braun, Frank Horlien, William Maderius, and Stuart Madin. I think there may have been a few others.

*So, you were in on the discussions as to the location of the school--whether it would be there at the Gill tract or if it would come to Davis?*

Yes, that's correct. There were discussions evaluating the pros and cons and, of course, there were differences of opinion--I suppose, as there would be with any major project of this kind--probably among the immediate staff and probably in the commodity groups (that's the industry--cattle, calves, sheep, swine people) as to where they'd like to see the school.

*Most of the staff probably wanted it in Berkeley. I imagine they hated the idea of moving.*

I think one is quick to acknowledge that if one's biased or not-- which I guess we usually are. I would conjecture, yes, that [moving] tempered with probably some reasons that they felt were more valid, more solid, more purposeful, and maybe the Berkeley area would be a good location for the school. The veterinary science research group had been working there for many years, and there was no question but that the basic disciplines were well established on the campus at Berkeley; also available were the allied medical sciences. These were all related, as well as physics and chemistry and mathematics and basic microbiology subjects.

*There was also close at hand over in Marin County a dairy industry.*

Yes, and there was in those days and it remains a rather substantial industry across in Marin. In those days, it was a very highly developed and intensified dairy industry--the milk shift--for that area. It had traditionally been a milk producing area. From Santa Rosa south down through Novato was an area generally recognized in those days as the egg basket of the world where most of the poultry production took place.



About that time the turkey industry was just beginning to grow and improve in its size and worth, and subsequently did really center on the breeding stock operation in Sonoma--one of the largest breeding turkey operations currently in the world.

*With all of that, then, pushing for Berkeley, why did it come to Davis.*

I'm afraid I'm not in any position to make any unequivocal, precise statements in relation to why it came to Davis. I think one should remember, probably, that you have to, in respect, establish a concept for it. And then, one also considers that this school, after all, is primarily to serve the livestock industry. In California, the livestock industry associated service to the livestock industry with Davis--the extension service (although there was extension in Berkeley), the animal science department, animal judging and all that; and many of the prominent people in California had received their training at Davis. I think it's natural for them to sort of associate the rationale, reconcile the idea that, "Well, the veterinary school, were going to have one, should be concerned with the treatment of animals. Then why not have it at Davis?"

There, of course, is a marked difference in commodities in veterinary medicine. As you know, there has been a tremendous trend to develop small animal medicine. There are literally thousands of small animal hospitals. California was one of the first areas where this developed, particularly southern California. So, there was an entirely different group of people to be served.

One also had to be aware of what kind of an image the school would project. Was it going to be a school predominantly for small animal people? For the commodity groups? Or, were you going to try to effect the happy medium and keep everybody a little happy, but not winning any Nobel prizes with any one group? This remains a problem with anybody, I think, that's administering the School of Veterinary Medicine.

I think long traditional heritage in California of Davis association and people who had fostered this heritage and were part of it had a lot to do with where the school went--plus the legislature. In those days, the legislature was still an agriculturally dominated legislature, and within agriculture, even more so, a strongly oriented livestock agriculture.

*What was the reaction on the part of the faculty whose names you've mentioned when it was decided to go to Davis and they knew they'd have to move?*



I think some of them felt--those that were along in the career pretty well--that they would be very happy if they could be left in Berkeley. There was a tremendous loyalty, however, and a tremendous feeling I think, a spirit of cooperation on the part of this darn thing--"Let's get it going in California, no matter where it goes. I might be less happy if I find I have to go to Davis." And, maybe at times, in a more pessimistic mood, one might have heard somebody say, "I think I'll just stay here." But really, it didn't work that way very much. I know a number of the people did leave Berkeley, particularly a lot of the younger men who were on the staff over there. But, I'm not certain that one can legitimately direct the rationale--the reasons or the provocation--for leaving to the fact that the school was going to be established in Davis, because after all, these were younger men.

*Were there any who made the move to Davis who were unhappy after they arrived here? I'm thinking particularly of Jerry Beach.*

I was a co-worker of Jerry Beach, and we were socially with the Beach's quite a little. We played bridge with the Beach's and we took some trips together. My wife and Jerry Beach's wife both being from Humboldt County in California, were very compatible and very friendly. We enjoyed the Beach's socially; and I enjoyed him as a scientist. Jerry Beach and Mrs. Beach were well-rooted in Berkeley, but I think the man was too big a man to maybe express subsequently any severe concern he might have had about his decision. If he did, he didn't express it to me. He may have felt it, undoubtedly, like anybody that had been well established in another area and felt a part of another community; he undoubtedly had reservations. But, they were not expressed to me.

*There has been a conjecture that he was unhappy, which may have been a contributing factor to his death. Do you think there's any truth to that?*

One gets on pretty loose ground when one attempts to identify reasons and rationale for men doing irrational things, or what would appear to be an irrational act. Jerry, in some respects, according to people who had known him before, as well as I, upon his return from China (after his assignment over there) to Berkeley-- didn't seem to be as well oriented to all the problems that one faces in life as he might have been before he went to China. Whether this continued to be a factor, or whether it was one of the others (including possibly health) those of us who were close to him still didn't know. Plus, the fact that age has a way of slowing a man down in a normal pattern may have been a contributing factor. Jerry was a very proud man; he was inclined to be an impetuous man. He also wished to be a precise man; and he liked the feeling of accomplishment.



I'd rather say I think he found it most difficult to have to make a reconciliation that "I'm not as good as I was thirty years ago." There may have been a health problem. I think that's about as far as one might have to go to talk about some of the things that might have bothered Jerry in the last few years.

*Would you discuss and evaluate, if you wish, the development of the School of Veterinary Medicine here, regarding any of its aspects--research, teaching, and so on?*

Of course, it was an enormous project, and it was very interesting in that, of course, it had to be done--the planning had to be done from the standpoint of the building, working with the architects to design all the laboratories and all the offices and the research facilities, by people who were full time occupied with their own research and teaching. This so frequently happens. I think these people did a remarkable job. The concept was to have a three phase responsibility on the part of the staff members, and the building would, then, have to reflect functionally this responsibility--sort of teaching and research and public relations. The concept, including some of the curriculum, did have in it just a little bit of the new and the innovative--I think maybe for that time, just about enough. It might have had more. You know, when you look back you could always have had more; but I think there were some definite progressive forward steps made from which I don't think it was necessary to retrench or say this was all that wrong. The building was not funded--eventually (that is, the last two or three years) it was funded--to accommodate the facilities that were initially planned; of course, this is what usually happens--inflation during building. So the initial idea--the concept of having veterinary research facility--had to fall by the wayside in lieu of having a facility which could be adequate to take care of the primary responsibility--namely, teaching.

Speaking of Jerry Beach and facilities: you know, it's rather interesting that about the only facility of that kind that was left to be funded was poultry research; it did get a little isolation unit and setup, which Jerry did have and appreciated. Of course, Jerry had the best facilities at Berkeley, also, for research. Old and decrepit as they may have been, they were operable and the floor space was at least there, which is more than most of them had for any animal research in Berkeley.

So, I think, in retrospect, one would have to say, "Pretty well done," to all those early planners who were under a lot of stress and did spend the time. I can remember those blueprints being all over Dr. Traum's office . . . Well, not so much in his office, because his desk was usually so cluttered and his room was so messed up that there would be no place to put them down anyway. He was so difficult to corral for any length of time that there wouldn't be any point in putting them in his office anyway, because you'd want to seek his guidance sooner or later--usually sooner. The planner usually met in the lab of Dr. Schalm with Traum, De Ome, and Dr. Haring.



I'm prompted at the moment to try to put together something, before I forget it, about their attempts to design facilities for receipt and removal of the clean and so-called dirty materials through various elevators and various areas of the building; they were supposed to not contaminate something else and not generate this. Heads had been knocking and several group meetings had been held, and there was a lot of exasperation because somehow or other they were just unable to put this thing together. Somebody said, "Did you talk to Dr. Traum about this?" [answer] "No." "Why don't you get him in here?" As usual, he was a little hard to find; they probably got him out of a telephone booth, or away from talking to somebody downstairs. They got him up and brought him in. He came in and was probably no closer than four or five feet from the plans, and stood there nor longer than, maybe, four or five minutes, and he said, [imitating his voice] "Ah, yeah, take out this. Why don't you take this here and put this over here. You put this in here and put this over here and move everything that way and bring this over here and bring it back." Well, interestingly enough, that was the answer.

I remember that Dr. Hart was very emphatic about his desire to have the school serve the livestock industry and to avoid the image of being a factory for people only concerned with small animal practice. Dr. Hart felt, of course, I believe, that one way to accomplish this would be through the selection procedure of the students. Certainly those students who came in with characteristics which seemed to indicate that they were going to favor large animal practice were chosen by Dr. Hart as one of the avenues by which he could hopefully assure, at the end of the training period, that the majority of the candidates would go out to serve the livestock industry as practitioners in large animal medicine or in large animal regulatory medicine--state, county, federal or otherwise. I believe that there were times when Dr. Hart actually believed that this was going to be accomplished. And, I don't mean to be at all critical of the fact that he had a feeling for this and he felt maybe that this was a way to do it. I'm sure that the initial criteria and the evaluations may have been conducted in that light, but the choice was really made, eventually, by the student who, certainly, when he left the school, was free to work in the area in which he chose to go. I believe that had Dr. Hart seen the first ten, twelve, or fifteen graduate classes, ten or fifteen years following the first class, he would have said, "No, this isn't what I had in mind." I'm sure that the degree of emphasis that went in the field--the application of the product--was different, at least from the numbers game standpoint, than that envisioned initially by Dr. Hart.

At the outset, the school was in a position to attract highly qualified students. I was then working for the state college laboratories in Sacramento and had very close contact with the school; I was president of the California Veterinary Medical Association and had considerable contact with the faculty and the dean. The school fast gained the respect and attention of the veterinary profession throughout the state and, by and large, I think also their support.



I think they were pretty happy with the products they saw come out. The growth of the school was, I think, tremendous, particularly in the time frame allotted. One usually thinks [it takes] ten, twelve, or fifteen years to mature one of these places, particularly from the research standpoint. The organization and the development of the school and the freedom of operation permitted it to make tremendous growth, and was so recognized at the national and international level.

*Who would get most of the credit for that? Dr. Hart?*

No. No, I don't think so. I think it goes right back to each individual; and, this is a rather hackneyed way to talk about it--like in the football player, you know, "We ain't got no stars; we all win this game." But, really, one saw the detached group at Berkeley--going their own way, working with their own diseases for many, many years, in their own environment and with their own associates--become completely dedicated while working at Berkeley on the plans and on the development of a school at Davis. And, I'm sure the same thing went on with those at Davis that were involved, from the youngest of the graduate people who were involved with the program, up to and through Dr. Haring; I'd have to say it was like a unanimous, one hundred percent team effort. There was not that much of a dominance amongst those that contributed in terms of ideas and loyalty and dedication.

*Was Dr. Hart the logical candidate for dean after the year of Dr. Haring's deanship?*

Well, if one says "the logical one," one must consider the optimum qualifications and characteristics of a given man for a given job. Of course, all the personnel people throughout the world have their own way of doing this on paper and have all kinds of forms and ratings and review gimmicks. It reminds me a little bit of the fellow, a friend of mine, whom I asked one time how his wife was. He said, "Compared to who?"

George Hart had tremendous stature in the field of animal science; he was a dynamic individual and, in this respect, certainly qualified. He hadn't been working in veterinary medicine per se as a researcher, he was more interested in the animal science aspect of it. So, if one wished to consider him less than qualified, I suppose this would be one of the criteria. But I think probably, by and large, the dynamism of the man and his wide range of interests would probably consider it as one.



*Was it fitting that Dr. Haring should be given the honor of being the first dean?*

Oh, I think yes, very definitely, if for no other reason than that the group that Dr. Haring had headed at Berkeley was the veterinary science research group of dominance in the state for many, many years. He was an internationally prominent man and a nationally prominent man in veterinary medicine, and well respected. So, I think this was the only choice.

*Even though he remained at Berkeley, I suppose he made a number of trips to Davis?*

Oh, yes, yes, surely, surely. And, as long as there weren't students here, and the plans were being worked over all the time over there in Berkeley, geography was no problem.



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## Donald R. Cordy

### Interviewer's Notes:

These interviews were conducted by A.I. Dickman in 1974.

### Curriculum Vitae:

1913 -

**Chairman, Department of Pathology, School of Veterinary  
medicine, UCD; 1950 - 1983**



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## Donald R. Cordy

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### Origins and Education

*Dr. Cordy, would you talk about where you were born and the date of your birth and some of the experiences you have had in growing up?*

I was born on a Wisconsin farm on February 17, 1913, and spent my boyhood on Wisconsin dairy farms and in Wisconsin small towns. I moved around quite a bit.

My mother was a schoolteacher and she went back to school herself and then looked for teaching jobs. We came to California in 1925, sort of a forerunner of the Okies and I went to junior high school in Long Beach. Then we moved to Compton where I went to high school and junior college. It was not as urban as it is now, but it was pretty well built up.

*You did your undergraduate work at UCLA then?*

And then I went on to UCLA, yes. I don't remember any particular occasion when I was seized by the idea of going to veterinary school. I was a zoology major. This was in the depth of the depression and while I was interested in wildlife work, there were very few jobs there. I was somewhat interested in human medicine, but I guess I preferred animals to people. I knew only one veterinarian, a fellow from Hawaii, who was my only contact. I applied to four vet schools and had been accepted by Michigan State and so I started off for Michigan State in the fall of 1934.



*You graduated in the spring of 1934 from UCLA, right?*

Yes.

### **Veterinary Medical School**

I stopped off in Iowa to talk to the dean there as I hadn't heard from them. At this time I think this was the first Iowa class that had a two year pre-vet requirement. Of course, I had a bachelor's degree which was unheard of then. He said you can be examined on this, and this course is the same as this one, and you can get done in three years and two summers. So I stayed.

*At Iowa State?*

At Iowa State; and I graduated there in 1937. All along I sort of had the idea of going into practice, but I guess being stepped on by horses and what not turned me away from practice [laughter]. I was curious about things, and I realized people in practice had to move on to the next case without satisfying their curiosity about the case in hand.

### **Graduate Work**

I was able to get a fellowship to Cornell and I spent my first year there taking a masters in pathogenic bacteriology. I was a federal "cooperative agent" in the brucellosis laboratory. My interest was really in pathology, so the second year I was there Lederle Laboratories provided a research fellowship. I occupied this for two years and took my Ph.D. in pathology.

*That was at Cornell?*

That was at Cornell, which was probably the country's outstanding veterinary school at the time. Dean Hagan was still a fairly youngish man and accumulated quite a faculty and there was a splendid spirit around the place.



## First Position

There weren't very many available jobs, but I took one at Washington State as the pathologist there (fall of 1940). Dean Wegner was of the traditional old vet med school; he had been very interested in horse surgery. It was quite a small school with a pretty miniscule budget. I think there were about eight of us on the faculty, one in each specialty area, without any assistants at all. I taught general pathology and parasitology in the fall; special pathology and histology in the spring. I also did the autopsies. One of my predecessors there let the clinicians do the autopsies and he would just do the microscopic follow-up. I didn't know about this, so I started doing the autopsies myself and this amazed the clinicians and made them very happy.

We had a little student hourly labor which was the extent of our technical staff, but this was a good way for me to get experience. There was virtually no time for research with a teaching schedule like this. I believe we had two men in the clinic, two clinicians, and one each in most of the other areas. I certainly got a lot of experience; making the usual errors in teaching and so on. I had to cover a lot of ground and learned a lot. I was there two years before I went into the army.

*Would you say something about the difficulties the vet med school itself was going through at that time?*

At this stage of the game things were pretty quiet, the dean ran it out of his pocket as a single department. There was not really much spirit of innovation around the place. With an organization like that there was a certain amount of personality clash. Effort was not really directed at the improvement of things until after the war. It was a pretty quiet period then.

## World War II Experiences

*You were a veterinary laboratory officer in the India-Burma theater in WWII, is that right?*

Yes, I ran the veterinary section in a medical lab and was the theater epizootologist. In this latter job I was an outbreak chaser. I'd go all over the place on outbreaks; I'd go forward on high priority and more or less bum my way back.

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Donald R. Cordy



I spent about two-thirds of my time at the base lab and about a third in the field. They fed us better in the combat zone, so If they had a good cook I'd stay out as long as I could.

*What were the major animal health problems?*

Surra, a trypanosome infection in horses was the biggest one. We got this in captured infected Japanese ponies and we had hundreds of cases.

We had a certain amount of glanders, vaccination anthrax, and the usual parasitisms. The lab section was involved with food and water microbiology and chemistry. I had four non-coms, one of whom went back to vet school after the war. He was Jim Himes, now a physiologist at the University of Florida veterinary school. Mine was sort of an educational tour of duty because my commanding officer was an M.D. and he really didn't know what to do with me. The theater veterinarian was 1,200 miles away in Delhi and couldn't do much about my activities, so I lived a pretty independent life.

## Return to Teaching

*Then, when the war was over you returned--*

Came back to Pullman in January 1946. I had some accumulated leave, but I think I got there for the spring semester and picked up pretty much where I left off. Because of the change from a twelve-month to a nine-month schedule, they had no seniors for that semester; so we drafted sophomores to do autopsies, which worked out pretty well. This was about the time that things began to stir. There were a number of young faculty members added and funds accumulated during the war were now available. Washington State had a new college president about this time and new veterinary buildings that had been just about finished when the war began. There were curricular improvements and a great deal of physical plan improvement and faculty expansion. About half the classes in those days were Californians as they had no school in California yet.

Dean Wegner stepped down and Dean Nichols came in, an Ohio State graduate and a physiologist. We got further expansion, budgetary and personnel, additional buildings, and the usual growth pains of that period. We now had sufficient staff though still small so that there was a little time for research which a few of us pursued.



*Were you married at this time?*

I was married in 1948, after I came back from the army.

*In Pullman?*

In Vancouver, Washington, actually. Our son was born there shortly before we came down here, and our daughter is a native daughter of the Golden West who was born in Woodland.

*Would you mention the names of your wife and children?*

My wife was Elizabeth De Young from the northwest and my son is Ross Henry Cordy, born in Pullman, and my daughter is Ann Elizabeth Cordy.

## **The Move to UC Davis**

I'd been corresponding with Dean Haring from about the time the school here was in embryo stage, while they were just beginning to get it organized. I wrote to him during the latter part of the war. I got a reply that they weren't at the place yet where they needed a pathologist, but that he'd keep me in mind. After a few years they finally got to this point and I came down here in the fall of 1950 (from Pullman). Dr. Hart was dean at Davis then.

I came under a little bit of a cloud as I'd been helpful in convincing two deans to step down at Pullman and I guess this worried Dr. Hart a little bit, but he was a really pretty tolerant fellow. I came down as a top step assistant professor although Pullman had just made me full professor up there in an effort to have me stay.

The next year Dr. Hart tried to get me an acceleration to associate professor and tenure, but I guess they still wanted to look at me further. He actually was going to pay me the difference out of his own pocket and, of course, I couldn't have this; so, for all his reputation for frugality, he had a big heart.



## Curriculum Revision

Pathology had been taught for the first time, the year before I got here by Dr. Jasper and Dr. De Ome. De Ome had gone back to Berkeley and Dr. Jasper and I taught it the second year. Dr. Jasper and Dr. Howarth and I managed the autopsies that year and the next. Dr. Moulton came in 1953 and Dr. Kennedy in 1954. Dr. Jasper, having seen us staffed up, concentrated his efforts in clinical pathology so that the three of us (Kennedy, Moulton, and myself) were the path department for quite a few years. We started with an enormous ten semester-hour course that we taught in the fall--normal histology and all of pathology (general and special). This may have been great for concentration, but our feeling was that neither the students nor the faculty had much time to contemplate while they were absorbing all this. We were perfectly happy to teach histology, but felt that this was a prerequisite to much more than pathology itself and we really wanted to see it in with gross anatomy in the anatomy department. This would allow us hopefully to expand the six or seven units of pathology to ten. This was about the time in the early '50s when the first curricular revision came up, with reconsideration of the original curriculum with its big blocks of teaching. There were really three major proposals in this revision. First, we wanted to pass histology from pathology to anatomy where many people felt it belonged and as a prerequisite for much that followed. Secondly, we wanted to get a physiology course of substantial size and depth with a medical orientation to take the place of the one offered in animal science, which was well taught but rather limited in scope and depth. Finally, we wanted to get biochemistry or physiological chemistry totally within the school so that it would deal with things with a medical orientation rather than a more general direction as the one in animal science was.

We ran into a little trouble trying to pass these plates around. Our effort to transfer histology from pathology to anatomy was intercepted and the authorities (I guess this was the campus course committee or somebody outside the vet school) said well this is the same as the histology course offered in zoology, so you'll have to be satisfied with that. They made some modifications in it, to include ruminants and all that. We figured we'd lost on this one, but later on we got the course back. We did establish a substantial physiology course of our own. I believe a year or two before we had convinced the campus that we should have a veterinary laboratory section, taught by our people with our orientation, to go with the animal science chemistry lectures. We had to accept this for some years further. Later we established physiological chemistry within the vet school. It was a larger, more medically oriented course, a very excellent course, pioneered mostly by Dr. [Arthur] Black. This was the first great curricular change and it was an interesting campaign.

The founding group of the vet school had not had very much teaching experience, particularly clinical teaching. They were mostly researchers from the Berkeley and



Davis campuses. About 1950-52 there was quite a large addition of faculty members from all over the country, most of them fairly young and full of innovative ideas. Thus the great plan was modified by these young turks. And the founding group became the conservative sort with "Don't touch things." The people from outside didn't realize that this was sacrosanct territory; they just thought, "Here's a curriculum, it isn't like I'm used to. I've got an idea, let's change it." The great plan was something that was talked about and attacked with great joy by a lot of people, including myself. There were elements of it that were very well thought out, and there were others that we changed, some for the better and others that we backtracked on. You don't find out unless you try things. This is something that now is long gone; the original group has grown mellow with time, I guess.

We once reduced clinical pathology units at a time when we were developing the clinical years which were really not anticipated in the original plan. So we began to plan clinical pathology; but things began to crowd other things and we had the effrontery to ask Dr. Schalm to reduce clinical pathology offerings by about three units out of ten or something. Others took little cuts. A student spends many hours studying blood smears, and in practice he probably would have somebody else do them, so the two thoughts were: one, that he should do some for understanding the problem, and the other said he should do a whole lot so he could get good at it. This I think was a low blow to Dr. Schalm. The majority decided that this was disproportionate and reduced it. Other people suffered other blows, but that's what I recall about the original group. Anatomy, not only here but in other places, suffered reduction in the teaching time at about this period. This was nothing in particular about Dr. Julian's offerings, it was just a nationwide revolt against the amount of anatomy that most of us had had to take not twenty years before that. Pathology, when we dropped histology, gained three or four hours, and we've since lost some of this.

A common problem particularly in the basic sciences, was that, there were a lot of good teachers and a lot of interesting, factual stuff; but we would periodically forget our clientele--who we were trying to train. We were in a sense including things that ought to go to graduate students but the vet student didn't really need to know all this, although it was interesting. So, we've had these sorts of curricular catharses periodically.

Another period, we struck off so much across the board--I don't know how much it was, we all lost a little--to accommodate more clinical experience actually. And then with the core and track program we had most courses somewhat reduced. In pathology we used to have thirty hours. We reduced this to twenty-three before the core program was implemented and reduced it to nineteen or twenty after it was, so that over a period of years we whacked off one-third of it. I think considering our goals--teaching students what they ought to know--we are doing just as well almost.



The building was planned by the original group. It was a superb building, known locally as the horse pentagon because it was so big for the Davis campus at the time. There were also remarks to the effect of "four million for forty" (four million dollar building for forty students in a class). But we grew steadily and finally outgrew the place. Assignments of space in the building were not entirely according to the original plans. Some departments grew rapidly and some didn't grow as much, so people were placed according to available space. In fact, pathology never has been in the space designed for it across from the dean's office.

### Development of the Department of Pathology

*When did you become the head of the unofficial department of pathology, and how did the department develop over the years?*

When I first arrived Dr. Jasper was holding the fort for pathology. He was actually trained more in medicine, but like all of the original group, had been teaching everything a day ahead of the students for the first year or two. When I arrived I was designated as the pathologist and took over worries about space and technicians and teaching effort and all. In Dr. Hart's day, we ran as one big department pretty well. The budget was in his control; we had to appeal to him for everything. He had a well-deserved reputation for economy; consequently, we were pretty careful about our request. Often we'd ask for something pretty unlikely to let him turn us down and breath a little fire and then we'd get our second choice which was what we really wanted in the first place [laughter]. I can remember, we bought a mercury vapor arc projector called a scorpion. It would project onto a screen or into a hood where ten people could stick their heads and view the microscopic projection. It cost us something over two thousand dollars and this took a little convincing. He wanted to know for quite a while afterwards did that "scorpion" turn out to be as useful as we claimed? We were really pretty well provided. This was pretty much before the period of the external grants. Our research was sort of catch-as-catch-can, as to funds.

We were so busy getting the place started that we didn't have much time anyway. I don't remember exactly when we were informally grouped into departments. It must have been during Dr. Jasper's tenure as dean [1960]. We still were not officially departmentalized but we were brigaded together with anatomy and clinical pathology. We did all have some things in common, but we really were still pretty much three specialties. This reduced the number of people that appealed to the dean, but meant that anatomy and pathology had to go through another layer since Dr. Schalm was the chairman. He was very fair, but he had to be briefed on what we wanted and why we



wanted it, and then he had to go to the dean with the hope that he understood our story. This meant some difficulties so that when departmentalization came we pleaded for separate standing. We were all small departments, but by the time of official departmentalization we'd grown sufficiently to stand alone.

*You're referring to the official departmentalization in 1960?*

Yes. Well, there was quite a little politicking about that--how many departments would the authorities accept, how much budgetary control would the departments have, and could we convince them of natural groupings, such as physiology, pharmacology, biochemistry altogether. This generally worked out pretty well. Some other problems were not as easily settled.

*What were some of the most difficult problems that were not easily settled?*

The clinic organization even yet has been a problem. The problem was in trying to correlate teaching departments with operating a hospital. We have tried all sorts of combinations over the last twenty-five years. Now the hospital stands alone as a place where various of us do our teaching, but the departments provide faculty and the teaching programs. I had enough troubles that I didn't get much involved in the organization of the clinic over the years (laughter).

We were fortunate in pathology. We had a very homogeneous department (more or less). We'd all share the professional student teaching, the graduate student teaching and the hospital-type teaching. Originally and for some time we shared it all equally. We still share the work but unequally since now we have people who do this or do that better. We were generalists in a way and knew each other's problems or knew the department's problems and really had very little trouble internally in this regard. We went our separate ways in research. We were able to develop specialties and more commonly than not our research is done with a biochemist or a physiologist or a clinician or whatever, rather than being done jointly among us. Occasionally two of us might do something together. But, we were usually the pathologist on a team that was composed of additional nonpathologist specialists. In things other than research we have been quite a homogeneous group so that we were spared a good many problems where departments had diverse interests and diverse specialties that pulled and tugged against each other.



## Appointment of a New School Dean

*Going back to about the time that Dean Hart retired, did this create much change in the progress of the school and how was the new dean selected?*

There was a confidential committee, and by some device that I've forgotten, it received suggestions and developed a list of prospects both internally and from outside the school. Most people wanted someone that was of appropriate age so that he had a fair amount of time left and yet old enough to have acquired some experience. I don't think there was any preference for a person from here or for a person from the outside, one way or the other. There was no preference for a specialty, basic versus clinical, that I can recall.

*Dr. Schalm was no doubt a candidate, being the associate dean.*

Probably, and I think the newer people, that is people from outside. Because of little differences of opinion about curriculum and so on between these newer people and the original group, they were probably dissuaded from offering it to Dr. Schalm. He was still at an appropriate age and all. I have a lot of regard for him, but I think it was a matter of acceptance maybe among many of the newer people who now made up a large part of the faculty, and would press for curriculum revision and other things that didn't jibe with the great plan.

*Did Dr. Hart exercise much influence on the committee in its choice?*

None at all that I can recall. There were members that were outside the vet school on most of these committees.

*I wondered if it represented in any way any continuance of the struggle between animal science and the school.*

No, I don't think so. This veterinary-animal science friction was seen on many campuses for many years and in various places, but I don't think it amounts to a great deal now. There was a natural inclination for the department in animal science here with a good biochem course and a good physiology course to have established stakes in the ground and to defend them. There was an effort not to proliferate courses for every little special need.



## Further Development of the Department of Pathology

*Can you remember the names of those people in the department of pathology along about this time, and then can you add the names of those as they came along?*

Dr. Jack Moulton was added to the department in 1953. He was not an assistant professor. I think he was a lecturer and a junior specialist or something of the sort and he had to finish writing his thesis at Minnesota. He was a Washington graduate and took his Ph.D. at Minnesota. Dr. Peter Kennedy, a native son who went to vet school in Kansas and did his graduate work at Cornell, came in 1954, and in about the same status. He still had some of his thesis work to finish. There were not all that many Ph.D. people in pathology in the country. The big expansion in graduate study did not come until about 1960. The post war expansion of the existing schools and starting several new ones made the procurement of good faculty difficult; however, we were lucky to get these two.

We went along, the three of us, for some years, and in 1957 Dr. Dungworth came as a graduate student (lecturer and assistant specialist) and we drafted him, as we did all our graduate students, for a certain amount of assistance in laboratories and autopsy work. He finished his Ph.D. in 1961. He was a Liverpool graduate, spent a year in Canada and took his Ph.D. here. He went back to the University of Bristol for a year before we could convince him his future lay here and we got him back in 1962 as an assistant professor. He is now the fourth regular in service in the department. While he was one of our own, he at least had been partly trained and had taught elsewhere.

While Dr. Dungworth was in a teaching position at Bristol in England, we got Dr. Peter Richards, who was an Australian graduate from the University of Sydney. He came to us in 1960 through the Canadian school at Guelph. He was a graduate student and had the assistant specialist title. He was involved in laboratory and autopsy teaching. Dr. Richards and Dr. David Gribble were both long-time graduate students. We learned the hard way never to do that again. They carried very nearly a full teaching load and in what would be a staff member's research time, they did their graduate work. This meant that it took them a long, long time.



*The same thing had happened to Dr. Julian hadn't it, in anatomy?*

Yes. Dr. Dungworth also to some extent, although he was not quite so heavily burdened. This arrangement meant that they did teaching duty but they weren't accumulating any time toward leave; and were not anywhere near tenure. Yet they were doing a first-class job in the kind of teaching that we assigned them.

*Was this done to save money or because recruitment at that time was difficult?*

Mostly because we couldn't get assistant professorships. Recruitment was pretty difficult and teaching assistantships are impossible in the vet school because our graduate students who come on fellowships are twice as well paid as the ordinary teaching assistant who has just a bachelor's degree. Partly this is because we're competing with private practice. All of our graduate students, even if they come on their own money, do some teaching (autopsy and laboratory) as part of their training. We had a series of these young people under the title of lecturer and specialist. We had a specialist position for several years before we finally got it up-graded to assistant professor. All have shared in laboratory teaching and the autopsy work. The autopsy work is really their residency. They are learning, but at the same time we use them to help us teach seniors; otherwise we'd never cover the bases.

*Will you talk about the development of your fine pathology training groups and a NIH grant that you received?*

For some years we might have one graduate student in the corner of the laboratory and he lived a sort of isolated existence. There weren't enough of them to really offer much in the line of advanced courses and seminars and the like. He got a lot of personal attention, however. But when we got the NIH training grant we had at first three positions and later five. This seemed somehow to generate many more positions. We had very good foreign students sent by their governments. We had a number of military officers and U.S. public health service officers. We had an occasional person on an individual fellowship from NIH or NSF. In the early 1960s we probably had half a dozen graduate students at a time, but over much of the past fifteen years it's been between ten and fifteen. This has allowed us to have a series of seminars and conferences where a worthwhile number were present--small enough to allow individual participation but big enough to allow an effort to be made to cover some of the specialities.



We've added a little advanced course work. Our training program was a conventional Ph.D. program with a research emphasis interwoven with a residency-type program. In those days there was no way that a person could get a residency in pathology except perhaps at Angel Memorial in Boston which had one. We felt that if the first year or two were spent with casework in the autopsy room, students would be forced to read and discuss and answer each other's questions and that this would obviate giving a whole lot of advanced courses. Didactic courses weren't all that efficient. There was a great deal of rub-off education among a group of graduate students at their different stages of training. It seems to have succeeded so we've always held this notion. Some other schools have plunged the man into narrow research without this breadth. We've felt that with such a background he gets to see a lot of things; he learns about finding problems that need solving and sees real naturally occurring disease. He is at a stage where a lot of this is self teaching anyway and the casework is stimulating.

We have a conventional Ph.D. training too--advanced courses in the department and selected courses outside in other departments, and the thesis work. We usually encourage the student to present a thesis idea and defend it and modify it and come back and defend it again. If any of us were reasonably able to supervise what he finally came up with, fine. We didn't have to slice a piece off of our own areas of research and this seemed to be a better way to teach him how to find problems and set them up.

I think a big part of our graduate program is derived from Peter Olafson at Cornell. Both Dr. Kennedy and I trained under him. Among Olafson's other accomplishments he probably has done more for graduate training in Pathology than anybody else in the country. The "Olafson boys" are all over the place. Our people have gone out and done us proud as far as positions go and scored very well on the American College of Veterinary Pathology board exams.

We've got them all over the country, particularly in the West, and all over the world actually, in teaching and research jobs.

*You, yourself, are a charter member, I believe, in the American College of Veterinary Pathologists. Did that experience and that interest, along with the fact that you also spoke at several NIH meetings, contribute to the superiority of your program?*



Well, the ACVP was organized by a small group. I didn't have all that much to do with it, as I was out here in California without much travel money. A small group in the East and Midwest really got it started. I saw them at occasional meetings and contributed my support, but I was not deeply involved.

*What year was it founded?*

1948. I think we really moved at the San Francisco meeting of the AVMA where we got together and got organized. I was an early counselor. I had trouble getting to meetings in those days, there wasn't that much running around, so I contributed my talents by mail and phone. It's really a group for the practice of the specialty. The training does not require a Ph.D. Our method here is to train under the Ph.D. program, but people can do residency-type training and still pass the boards. It's not particularly a research group, but more or less a specialty practice board. We began with 40 members and now have over 300.

The NIH meeting I went to in Portsmouth, New Hampshire, was concerned with graduate training and related to the review of their training grant program. The few grants that were existing in veterinary medicine were represented there, along with a good many NIH people and the people in human pathology

*How many such grants did they give out?*

I don't really know for sure; I know Washington State has had one--maybe half a dozen.

*Can you give the names of those who are in the department of pathology currently?*

Dr. Moulton, Dr. Kennedy and myself are the senior ones in service. There is also Dr. David Gribble, a 1962 Washington graduate who got his Ph.D. (1970) here. Dr. Roy Pool did his veterinary work at Oklahoma State (he's a North Carolina man actually) and did his Ph.D. (1967) work here. He went back to Oklahoma State and taught a couple of years before we retrieved him in 1969. He's one of the outstanding young teachers in the school and interested in bone disease. Dr. Osburn is a Kansas graduate who did his Ph.D. (1964) here, went to Oklahoma State for a couple of years to teach, and finally took a year or two at Johns Hopkins with Silverstein's group in immunopathology. He returned here as assistant professor in 1970. Dr. Pulley is a UCD graduate who went to Angel Memorial Hospital in Boston where he did his general internship and a pathology residency and then returned here to do his Ph.D. Cornell lured him away but we retrieved

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him a couple of years later (1973). He went into private pathology practice in September 1975, one of the few in the country. Our younger people, are mostly ones who had their Ph.D. from Davis. This is supposed to be bad and there is some degree of hazard except that most of them have had experience before or after at other schools. It's been difficult to recruit good men for a decade or so now. When you have one of your own that you know all about and one that's somebody else's on whom you have only a few letters and that sort of thing, you take exception to the fact that this is supposed to be bad policy. These are really a pretty independent bunch of people who sop up new ideas in other places and bring us a lot of new things. We have Dr. Les Schwartz who is part-time in the department, and the rest of the time he's out at the Primate Center; he is another recent Ph.D. of our own. He's involved to a very small extent in the department.

We have a current vacancy. We lost Dr. Johnson (1972-74) who left us to return to Washington. At one time, when Dr. Jasper returned to clinical path, the department consisted of Mrs. Frazier, our technician, and myself. We drafted a few other people for a little help in the teaching. Now when we have a farewell party for a secretary or something we fill the room with our academic and nonacademic people.

## Department Graduates

*How many graduate students are there currently?*

I don't know exactly, somewhere between ten and fifteen. We've had between ten and fifteen for quite a few years. Some of them are in their thesis work and in the radiobiology lab or in the Primate Center and I may forget them since I see them infrequently.

*You've had so much responsibility for, and interest in, so many graduate students, would you like to talk about any of them specifically by name and what they have accomplished, where they are and so on?*

There's quite a group. We have three of them in Colorado, Drs. Young and Snyder and De martini. Colorado State, a small school, has got a very sound department. Dr. Van Kampen operates a diagnostic laboratory in Salt Lake City and has an appointment at the University of Utah medical school. Dr. Dan Gould is down at Albany at the Western Regional Lab. Dr. H. Olander (one of our most distinguished ones) is now a full



professor and pathologist at Purdue. Dr. R. Flatt spent some time in Missouri after he got out, but he is in the laboratory of animal medicine at Iowa State now in a responsible position. Eric Shortridge, Dino Martinovich and Graham Shirley are in New Zealand. Dr. Peter Richards returned to Australia (1970) with the University of Melbourne. I haven't really reviewed the bunch so that I may have forgotten some of them.

### Courses of Instruction

*Let's talk about some of the courses that are now taught in the department. Perhaps we could start with the courses that you have taught or are teaching--for example, Vet Sci 122A and B--was that the original basic ten-unit course?*

Yes, right. We gave a ten-semester-unit course in the fall semester--everything including histology. When we transferred histology out, we went to two five-unit courses (one each semester). That is, we gained about three units more of pathology so we were now at ten units, all of it on pathology--general and special. Nothing much has changed with that course. With the quarter system we split it into three: general pathology in the fall and special pathology in the winter and spring quarters. This totaled thirteen quarter-units, so we were about at the level we were before. This continued until our new curriculum. Now 105A (general pathology taught in the fall) and all the rest of this special pathology (the equivalent of the old nine-quarter units) is dispersed through numerous courses covering diseases of the various systems.

We used to take it up by systems, but we just took one system after another and then there would be a year's lapse before they came to the medicine courses in those same systems. Now, the student, having had a course on the normal nervous system comes back the next year and takes one on abnormalities of the nervous system. This is where I have half a dozen lectures and three labs that once were a part of special pathology; we've dispersed it around the systems this way.

The autopsy teaching has really not been much changed throughout. It has involved groups of seniors for periods of ten days or two weeks. The time and the pattern has varied but neoropsy pathology is taught pretty much the same way, with a faculty member and one or two graduate students being in charge. For the past two years we have had small groups of sophomores in turn who have come to the autopsy room two mornings a week where they're taught methods. As we come fully into the new curriculum, these sophomore students will move as juniors to the regular autopsy roster.



Our advanced courses began originally in the early '60s with something called advanced special pathology that was going to add a little something to each of the systems of the sophomore course but in greater depth for graduate students. But we found that you can't patch on very well and this became a sort of "selected topics" in advanced pathology, not trying to cover all the systems. We mostly covered two sorts of areas: where exciting research was going on currently (things that are not in books yet) and areas that were meagerly covered in the veterinary curriculum (neuropathology was one, for example) Eventually this course became a little bit too dis-jointed, so Dr. Kennedy took the section on pathology of reproductive failure and I took the neuropathology section. We have continued these as advanced courses given in alternate years.

Dr. Moulton organized a tumor course in the '60s. We had a sort of unique clientele, partly our own people who had diagnosed tumors in their residency training from their early months here, and people in other areas (virology and so on) who don't have the need for histological diagnostic skill. Thus we split the course into two, one in tumor biology that concerns causes and mechanisms and is of interest to many people, and a second tumor pathology course that is aimed primarily at our own people who will be looking at micro-slides of tumors. These are our formal offerings: pathology of reproductive failure, neuropathology, and the two tumor courses.

We also have a series of seminars and conferences. One of the most enduring and useful of these has been called the histopathology conference. This is something we've had from very early days, first informally and later as a regular course. It consists of a once-a-week session on selected cases from recent autopsy cases. Usually two or three of these are put out for a week with slides and the histories. The graduate students review these, come to some decisions, and then we project the slides and discuss them. These are often fairly unique cases that we don't ever come to a consensus on, but the arguments are instructive even if the decisions aren't all that firm. This conference has been very interesting to the student and I think very helpful; it has made them do their own decision-making. We have had for some years a biopsy conference where biopsy on surgical specimens from the prior week are diagnosed by the students, then projected and discussed. Two faculty members supervise this. We have an ordinary research-type seminar with presentations by advanced graduate students, local faculty and visiting scientists. We have periodically run an evening colloquium, often not on cases, but on an idea or hypothesis, or some graduate student tries out his research on the rest of the group for a reaction. These sessions are pretty loosely structured but usually pretty good. Then, the last few years, particularly because of Dr. Gribble's interest, we now have a primate pathology conference where they look at the good cases from the Primate Center.



*Have other vet med schools used your format?*

Our pattern has been impressed on a few other places by our graduate students going forth with the message. Ohio has a two year cycle with advanced courses in everything--advanced courses in pulmonary disease and heart. They apparently run through this cycle for all their graduate students. This must be a nice, organized way to do it, but we early found that we didn't like didactic lecture-type courses. We could get them to read, get them to argue, get them to think for themselves without a format, so that this didn't appeal to us. Cornell, once probably the best school in pathology postdoctoral training, has had some problems. When a strong man such as Olafson more or less retires, others compete for leadership. There is now a bigger staff, but they go their separate ways. They have people in nutritional pathology, tumor pathology and clinical pathology and so on, but they seem to lack the sense of unity we have always enjoyed here from everybody sharing everything and yet having time for some specialization. Dr. Olander went there originally to provide a central focus to the department, but he had trouble inducing these segments to send graduate students to him to learn casework. Being quite junior he couldn't beat the system so he gave up and went on to Purdue. Minnesota does a lot of their training at their medical school, and this has advantages and disadvantages. The human animal is just another animal, but the grad students probably get less veterinary pathology than they should. The amount of exposure to casework varies among schools. Most of them have some kind of advanced coursework, seminars and conferences, but some of them had very light casework training. Our feeling all along was that the pathologist had better know real pathology and with this background he can move into whatever pathology research areas he wants to. He isn't going to stay with one project forever; he probably will go off in some other direction. He'd better see pathology of the whole animal and not some little part.

## **Instruction Techniques**

*Do you use audio-visual techniques extensively?*

Yes, we used to have quite a museum, but now we use kodachromes much more often. We have quite a kodachrome library now. You can't feel or smell the specimen but you can certainly see it in various magnifications and in gorgeous color.



We use kodachromes in lectures a good deal. In the laboratory we have an orientation projection using our kodachromes, and the students look at slides under their own microscope along with a little museum material. Movies are not so much use to us as our patients are pretty quiet. We still use the actual micro-slide but to a reduced extent compared to the old days when we used lots of them and drilled the student pretty extensively. Most students that go into practice won't see slides but they will send material to laboratories such as ours where we will read slides in making the diagnosis. We feel that they should have, if not advanced skills, at least some understanding of what kind of a view is in that microscope, what the useful limits are and what we look at and make decisions on. So we use slides more for understanding than for diagnostic skills.

We bring a good deal of fresh material from current autopsies to the sophomore laboratories. The cases may be entirely out of sequence (they may not have heard of the disease yet) but we find that if this is their first contact with the disease they will go read up on it and remember it well. This fresh material review is very popular (they've been taking courses on the normal only up until this point). They want to see more of real lesions from the autopsy room. We only have so many bodies and have to share them with classes at other levels so that we have some problems in satisfying their desire. We usually have a display of the cold cuts and discuss their significance and they learn very well even if they haven't heard of the disease. It doesn't really matter.

We don't do much in the line of reproducing diseases. We have enough known material of quality. In the past where we would try to reproduce the disease for them we got it too early or it didn't show any lesions--that sort of thing.

*Are there autotutorial facilities that the students use?*

Yes, there's a big upper part of the old barn (Learning Resources Center). At the time that was being designed, the department was thinking along the same lines and we devoted part of our old museum storage area to three little carrels--our microcenter. Here there would be a magazine of kodachromes with text material and reprints of classical articles to be read. The students make a lot of use of this. We've talked about throwing this material into the school's PLRC center, but a lot of students are perfectly happy to have it where it is now. We provide material for them such as lecture notes and laboratory instructions.

*Do faculty members occasionally frequent that room in the evening to be available to students if they need them?*



Not unless there is something special. We don't just stand by. It probably would be desirable but manpower is a problem. We have revised and revised as they posed questions and sort of anticipated the common questions.

*Are there any techniques of your own in the courses that you teach by yourself, for example, neuropath, that you use in your instruction?*

This is a course that's fairly conventional. It's really a course in the mechanisms of disease and the ways the nervous system responds to agents. It's not a very clinical course; we may use some odd or novel example because it shows something well. The course is for graduate students. There isn't really a book that covers it well; much of this is not in the books or not in any one book. We have them do a lot of reprint reading. We select the classical papers and put them out, and some of these are required and some of them they can browse through because there are quite a lot of them (the reprints) that have good illustrations, particularly electron micrographs. It is largely a lecture course. We try to get as much discussion into it as possible and raise questions at times. We put out unknown slides for study and later discussion. It's evolved over the years and taken various forms. It's a course that is being given every two years and there's a lot of time involved because it covers a wide field, a lot of new material comes in. This is true of anybody's course, I guess. We tried to interest some of our staff members to add to the alternate year graduate level offerings. We may get Dr. Dungworth to give a pulmonary disease course when he finishes his tour as chairman, and some of the others will come up with others.

Each of us has developed an area of special interest. I wasn't trained as a neuropathologist. My thesis was in this area but I was pretty much a general pathologist. In those times I got intrigued and headed over in that direction. Kennedy is interested in reproductive failure; Pool in bone disease; Gribble in kidney; Pulley is interested in neoplasms. Some of them are still riding two and three horses; Dr. Osburn is interested in immunopathology. He is probably the most active researcher in the department. His area intrigues graduate students; he has had quite a series of them going through his lab.

### Self-Study Committee of the School of Veterinary Medicine

*Dr. Cordy, will you comment on your participation on the self-study committee and the study that preceded the so-called core-track change in the instruction pattern of the school?*

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This came about largely because we felt that we had overhauled the basic science part extensively over the years and that it had grown overfat and the clinical curriculum had perhaps been a little slighted. In the absence at the time of the extensive internship and residency programs, our hope was to graduate the student a little readier for practice than in the past and to allow a degree of specialization. The process began with fitting everybody's ideas together. This called for removal of fat from any place it could be identified, and condensing much of this four-year course into three years.

Eventually a small part of it was moved back into pre-veterinary years. The fifth year was to be a fairly responsible clinical experience at a sort of sub-intern level. The students would be allowed to pursue a degree of specialization, not disciplinary ones in neurology and the like, but small animal practice, food animal practice, equine practice, with arrangements to allow mixtures for people in suburban dog-horse type practices or in small town general practices. There would be arrangements to allow highly individualized programs for the occasional person whose career interest was in avian diseases or laboratory animal medicine or zoo and wildlife medicine.

The whole program is framed around two cycles: one dealing with the normal animal, system by system--the anatomy and physiology and the like; this is followed by a small package dealing with agents of disease and host response. This is microbiology and pathology and such things inserted between the normal and abnormal cycles. This was followed by about a year and a half of coverage of diseases of the various systems in turn. Largely medical and surgical, these include also the pathological background, applied microbiology, with some pharmacology in relation to treatment. The student will be delivered at the end of the third year having gone through all the organ systems and is then ready for a degree of specialization. What had been senior clinical experience was moved up to the third year so that all students, whatever their final specialty, would have a half-day every day of clinical experience with all species. After all, they have to pass state boards and they have no assurance they aren't going to change their minds later on as to what line they follow. This means that at the senior level with this block of clinical experience behind them, instruction will be more at the intern level and greater responsibility put on the student.

I can't recall that the scheme met with a great deal of disagreement. Clinicians thought there should be more clinical work and would bring the tracks forward into the third year. The basic science people were worried that their offerings might be made somewhat superficial from the reduced time available to them. One problem is a tendency to teach the same amount of material in a reduced amount of time and the student suffers from pressure. In fact, after about two years experience at this, the faculty passed a resolution that the curriculum committee overhaul the program so that the student-faculty contact hours per week be reduced to some reasonable figure and the equivalent of so many units per quarter be reduced to seventeen.



We found that there was almost no free time experienced by some of the classes from eight to five. The success of the program still remains to be seen. The envy on the part of a class or two graduating just before this new program suggests that it looked pretty good to them.

We have finished the three years of it. Then the fourth year, the track year, is still to be implemented next year.

*What does core-track actually mean or refer to?*

The core is the common body of knowledge or a level of competence in this common body that all should have for purposes of licensing and for the background of whatever they do actually in their profession. The track was the track that they hope to follow, career-wise. In a more restricted sense it related particularly to the kind of a practice in which they hope to engage.

We find that the number of veterinarians tends to follow the number of people, not necessarily the number of farm animals, because so many veterinarians are in urban and suburban practices. We find that often the dedicated dog and cat man who goes out and never wants to see a large animal, comes back in a few years when he discovers that there are a lot of private pleasure horses in his suburban area that call for service.

*Did any other schools put core-track programs into effect after Davis, or had it been done in other schools before it was done here?*

Integrated teaching of disease on a system basis (as diseases of the cardiovascular system, regardless of species) rather than the conventional disciplinary methods of teaching microbiology, pathology, physiology and medicine and so on had been done at a number of other schools and really began in a medical school at Western Reserve perhaps as early as any. I really don't know--I was not on the track committee to know how other schools are handling that end of the program. My involvement was mostly with the earlier years of the core part of it.

*How did it affect the pathology department specifically?*



Really not too much, our earlier offering in general pathology was moved more or less as a block. We had already reduced it to what we thought were the essentials, and we reduced it a little more; it's offered at the same time as agents of disease, since we're offering the host response part of it.

Special pathology was formerly given over two quarters as a general preparation for everything else following. Pieces of this (variously reduced or improved or rearranged) special pathology are now parts of each organ system coverage in the abnormal cycle. I haven't seen a survey of total offerings but we have probably reduced it some. At least it's given now in connection with the organ system where it applies. Most of us think this is a better way. It's harder on us because we have fractionated our time so badly; we have an hour here and an afternoon over there, instead of having them at some regular period for a compact time. We now individually, in whatever system we are involved with, have a little offering here and a little offering there. It should be much better for the student, at least he has an easier time correlating all of this stuff. Some we integrate for him and some we move nearer together in time. Before they might have had normal anatomy early in the first year, normal physiology later in the first year, general pathology in the second year, and medicine along in the third or fourth year. This meant a long lapse between related things that the student had to cover and he had to make a great effort to correlate it.

*You commented on the concern of the people in the basic disciplines. I've heard it said that there seemed to be a trend toward reverting from disease-oriented study, for example in anatomy, back to a more disciplined-oriented study. Have you noticed if this is the case?*

I don't really know; these things, I think, really depend on good teaching and bright students and you can do it either way. I know I feel a little frustrated sometimes in my little brief offering that's tucked in here in the midst of something else; if I were back in the old system I would have a little firmer grasp of what I was trying to do. I don't know--it's probably early to think of reverting, but I'm sure that the pendulum is likely to try to swing back. There's something to be said for both disciplinary teaching and for integrated teaching.

### Intern-Resident Programs

For a long time, since we have few public hospitals--there are a few in large cities--we didn't have any device for intern or resident programs such as the medical profession has.



Most private veterinary hospitals were, at most, two or three men and the problems of selection and approval of places for internship were almost insurmountable. In recent years UCD, as well as a number of other veterinary schools, has its own in-house, intern-resident program. This is now pretty solid and is a product of some pioneering over the last six or eight years so that certificates of internship and residency will mean something now.

*Is this post-doctoral?*

Yes, this is post D.V.M. Most of them here and in other schools are graduates of other than their own school. We occasionally keep one of ours, but most of them come from other schools. They apply and there is a vigorous selection. Many of the interns would be coming to gain confidence and experience and to look over the area for practices.

The resident program is probably the main way that we're training the academic clinician of tomorrow since the Ph.D. is not really too suitable for some of these. A few of the residents are going to large group practices as disciplinary specialists--eye diseases or surgeons' surgeons and this sort of thing--in urban areas. The internship is a year, the residency is usually two years; a couple of specialties have an optional third year. These people are given responsibility for cases, more so with the residents than the interns. They help us teach under-graduates so that it's a two-way street.

*Just as a guess, what percentage of D.V.M.s currently are going through this internship-residency program?*

Well, we have about I would guess, ten percent, because some schools don't offer a program or have a very small program. We graduate, from twenty schools, something in the order of 1,500 students from all over the country, and if there are places for more than ten percent of these graduates, I'd be surprised.

*How are they supported?*

In ours, the house officers are paid out of the hospital budget for the most part in the clinical type of work. Our pathology residents are supported by training grants and all sorts of sources. With medicine and surgery types, these are mostly house officers and they are regular employees. This was the thing that held the whole program back over the country for many years--nobody wanted to plunge in and take a chance on whether the graduates would have a meaningful certificate at the end that would stand in good stead



in getting jobs and so on. The other was lack of a good source of funds, since research money, during the height of the grants, couldn't be used for this sort of thing.

It seems in my day--I can remember my class--most of them went out and just hung up their shingle. A few of them might take a salaried job for a while to gain experience much as interns would. Progressively as the years went by, more and more of them worked for somebody else; worked into a partnership or worked for a salary to gain experience, and then went into a practice of their own or a partnership with somebody else. But there were very few opportunities for advanced clinical training. The SPCA Hospital in Boston, Angel Memorial Hospital, had probably the earliest program; this was, I think, in the late '50s. They had a few internships and eventually residencies. The Animal Medical Center in New York City, another SPCA unit (there may have been a few others) was the only other place that a formal organized program was offered for a long while. We had, in the veterinary schools, the low-paid young clinician, but it really wasn't an organized training program; he was a very junior staff member who learned on the job.

*Where are the programs now available? What are the schools in addition to those you mentioned?*

I really don't know; one of the clinicians would be better able to answer this since most of them are medicine and surgery types of program.

*I was going to ask, would not the core-track program-- the fact that in their senior year, they're getting clinical experience--reduce some of the need for the internship program?*

Yes, I suspect so. They've done a junior year of general clinical experience and now they can concentrate on dogs and cats or food animals or whatever. We hoped the program would deliver them to the public very nearly as an internship would. There will be, necessarily, a little less responsibility. They are not yet graduated, they are not yet doctors; they probably will be more closely supervised. In human medicine now, with the extended clerkships and more clinical experience, the intern program is in some likelihood of disappearing, I understand. They would go from medical school with increased experience directly into residency. This may be the way we would go.



## The Teaching Hospital

*Would you talk about the teaching hospital, particularly as it affects your department?*

Pathology is one of the nonpatient care-support units, along with microbiology and clinical pathology and, in a sense, radiology. We've always provided this sort of support with autopsy service and with biopsy service on the living patient. This has grown from a few hundred cases a year to nearly two thousand autopsies and as many biopsies. The autopsy service has grown modestly. The caseload in the wards has plateaued for several years now. But the biopsy work has increased quite markedly over the years, mostly as we get bright young clinicians. People who develop specialities begin to see the advantage of examining tissue from the live patient and have confidence in how to get them from exterior lesions, from needle biopsies, laparotomy openings, and surgical excisions--all sorts of ways. Nothing is located where they can't get at it now. Our service is to provide the clinician with information from this. In the autopsy room we are given the impression that if anybody can find out what it is, it's the autopsist. This is somewhat true, but really we're just supplying information to the clinician who does have the final decision, even with autopsies. It's a support thing. We've used it for teaching. In the past, seniors and now juniors (new program) assist in performing autopsies and seeing the kinds of lesions and relating them to clinical science, primarily as a diagnostic thing. We have, you might call it, a bank of perhaps fifty thousand cases now where we have slides or retained tissues and the records on this many autopsies and biopsies. As we see cases in the wards and in the field, if some new entity shapes up, we'll go back to the collection and look for similar cases. Very often we define some new disease or some local occurrence of some novel disease from elsewhere or something of this sort. We provide diagnostic service to the clinician, a learning experience for upper-classmen, and the correlation of information on all these pathology cases. We do a certain amount of what we call garbage can research from cases or a series of cases arising in the autopsy service. This is our window on the real world. We provide material for sophomores; fresh specimens are shown in the sophomore lab insofar as mechanically we can arrange this. We have some problems of other people wanting to see the specimens. We have show-and-tell at the end of the day for everybody out at the hospital and we have to have them back for that and some of them have to be processed further; but we use a lot of this material for the sophomores.



*Regarding the biopsies, what determines whether your department does them or clinical pathology?*

That's one of the accidents of history. Let's say that in human medicine usually the pathologist is an M.D., the clinical microbiologist or the hematologist or the biochemist may not be. It has evolved there that the pathologist usually is the director of the clinical laboratory which includes clinical pathology and clinical microbiology.

Here [in veterinary medicine] we originally gave clinical pathology a quasi-departmental status, and then real departmental status by itself--the only place in the country. This allowed the group to flourish a bit and while they have a feeling of being not a discipline, since they include biochemists and hematologists and so on, (they really had a sort of a schizoid feeling about this) at least this separate status here allowed them to develop. It's one of our strong departments and we've sent young people out to other schools and they've given encouragement and leadership. The usual clinical pathologist, about the time we were founding the school here, was a half-time man attached variously to the clinics or pathology or wherever.

To get back to the original question, Dr. Schalm was originally in mastitis research and like all the initial faculty he had to cover a lot of bases as far as teaching was concerned. He got interested in hematology; over the years he has concentrated his effort there and authored a very good book on veterinary hematology and has achieved international stature. (Hematology, for instance, could have been in pathology or in clinical path, but the accident of history put it in the latter and those of us in pathology have been very happy about it.) We had enough to do with the ordinary things that a pathologist usually does. We were once grouped together with anatomy and clinical path in the pre-departmentalization period--actually we three ran separate sub-departments, I think when we divided up this was useful to all three of us at a time when we needed some independent status and the prestige that goes with it.

Now cytology--that is, the examination of cells from pleural washings or cells from body fluids other than blood--nobody really did. I think Rachel Smith, the technician in clinical pathology, did some of it and we did some in pathology and nobody really understood what we were looking at. This has fallen now mostly to Dr. Keaton in clinical pathology. Our man, Dr. Pulley, has some involvement with it, but this is another instance where we could have had a big argument and didn't. Actually pathologists are--what did they call them in the old days?-- morbid anatomists; we're morphologically-oriented, usually to solid tissues.



## Dr. Cordy's Research\_

*Would you comment on your own research, both qualitatively and quantitatively?*

Well, I've been involved with quite a few things. I think my own pattern has been either the recognition or characterization of new diseases. I work on them for a while and then become intrigued by something else. This reflects the generalist that the pathologists in my time were. It has been interesting to discover some of these diseases and characterize them and define them and pass them on to other people for some of the perhaps more sophisticated detail work.

My original thesis research was on encephalitis in dogs, and we defined something that has come to be called old dog encephalitis. This was published about thirty years ago. Just a year or two ago at Washington State they made the first advance from the work of the 1940s in relating this entity to distemper in the dog and recognizing it as a very late form such as that of measles in children. Transmission work has not been successful, but the agent can be demonstrated.

I got interested in salmon poisoning with Gorham at Pullman. This is something that's stood the test of time, I guess. We got a few infected fish from a hatchery in western Oregon to show the disease to our parasitology classes. This is a disease in dogs that's of daily importance on the west side of the Cascade Mountains and something of a novelty on the east side. The Oregon State people worked out the transmission cycle twenty-five years earlier--a beautiful piece of work on the dog, snail, fish, dog cycle. Our contribution was the discovery of some little dots in many of the cells. Nobody had really taken a pathologist's look at it. We wanted to know what kind of a disease it was, what parts of the body were affected, and what the sequence of events was. While we were doing this we discovered little dots in some of the cells and this later turned out to be a new rickettsia organism--unique in that instead of being insect transmitted it was fluke transmitted. This organism had been studied further, particularly at Pullman and at the Rocky Mountain public health service lab.

*And you also examined foxes?*



Yes, we reproduced it partly in dogs and partly in foxes. It's a disease of fish-eating carnivores, of the dog family--dog, fox, and coyote. We fed raccoons and Dr. Gorham fed bears shortly after I left there, and there was a transient establishment of the fluke infection, but not of the rickettsia infection. I haven't done anything with it since I came down here. Dr. Gribble has looked at the organism under the electron microscope and the studies in Washington continue-- they're mostly life cycle and of another related infection that's not very well understood.

*What have been your main research interests here in Davis? I know vitamin E deficiency.*

Well, yes, we had a few cases of so-called "yellow fat disease" in kittens and this put us on the search for a cause. Eventually we demonstrated that this was largely a canned fish diet or old frozen horse meat that was low in vitamin E.

*You call it yellow fat?*

Yes, fat--the body fat has a yellow color. The pigment doesn't hurt them, but it's a fortunate marker of the disease--it's an incidental thing. We could reproduce it by feeding a certain brand of canned cat food of fish origin, and by giving different levels of vitamin E we could find where the preventive level was. Since then this company and others have fortified their canned cat food with vitamin E, which apparently was low enough in the original ingredients and lost partly in the processing. Probably the deficiency only became clinically notable because the development of canned cat food as a large source of cat food instead of table scraps and all that.

*Is the disease called steatitis?*

Steatitis, yes. This is inflammation of fat. I got interested in vitamin E deficiency earlier as a cause of a muscle disease, the so-called white muscle disease in calves and lambs I'd seen in various places I'd been, including California. Depending on the species, you get different lesions. It's a muscle problem in the baby ruminant,



Dr. [Aloys] Tappel over in food science and technology is the man that really has been one of the important people in the idea that it's related to the aging process. Lipoperoxidation occurs in tissues all the time, at least on certain kinds of diets. Vitamin E is protective against this and with too little vitamin E I guess you accelerate the wearing out of the tissues which may well be a part of aging. Most of our animals don't get to a relatively old age except a few dogs and horses.

*I've noticed that you have gone outside of your own department for collaborators; for example, you worked with Dr. Henry Adler on mycoplasma infections and hemophilia in dogs with Dr. Kaneko, and so on.*

This is a pretty characteristic pattern for pathologists; occasionally a couple of them will work together, but we're more likely to find colleagues that are sort of a team approach.

I've been involved with various infectious diseases; this is how I got started on twenty years of collaboration with Dr. Henry Adler. He has an interest in infection in the animal rather than in organisms taken out in the laboratory. I guess fundamentally you'd say he's interested in infectious disease in the host--what goes on back and forth between host and agent--and he has an international reputation as a mycoplasmaologist. We've collaborated on a variety of things over the years. We had a goat infection, quite a devastating thing, in dairy goats in the San Joaquin Valley--several outbreaks.

*Is that PTLO?*

Yes. Now called mycoplasma. I went out in the field and investigated it and Dr. Adler isolated it from the material I brought him. Then we went back to putting it into other species and studying it. This thing was unique in that it was rough on goats, lambs, and pigs, but wouldn't touch calves, dogs or birds (which was a funny thing). Most mycoplasma grow with difficulty, but this thing grew lustily and it provided two or three years of interesting investigation.



I've been involved with Dr. Adler on the S6 strain of *Mycoplasma gallisepticum*. This is a neurotropic strain they discovered in the EPM department. Nobody had really investigated it before. We put it in turkey poultts and discovered necrotic lesions of brain and muscle. Dr. Lewis Thomas, who is now head of Sloan Kettering Foundation, got interested in it and picked up and carried on some of his work and discovered that the capillaries react by swelling and closing the lumens so that that area of brain is cut off from its blood supply. Adler and others, including myself, have done a big study of immunity in bursectomized chickens. Quite a group of us were involved in this and I was the morphologist on it.

I was involved from the mid-fifties with so-called star thistle poisoning of horses. This is a thing that we characterized at that time: a unique, specifically localized softening in the brain of horses on star thistle diets.

*Is this when you co-authored that work on poisonous plants in California?*

About this time, yes. We've returned to the fray with the star thistle problem for many years; right now we're working on it, but the problem has been that this has been toxic only to the horse. It took us years--we could reproduce it in the horse all right, but horses are expensive and they eat a lot of plant and you don't go very fast with horses. So we've tried all kinds of other species--dogs, chickens-- and other people have fed monkeys the whole fresh plant, the dried plant, extracts, and nothing has advanced us very far. We know what the disease is like and we know what season it occurs and how it behaves, but we would like to get at exactly what is toxic about it and why it picks these particular places in the brain and a lot of other questions. The locations in the brain are related to those of parkinsonism in man; the horse disease is really not all that much of a homologue of parkinsonism but the medical profession have been interested in it. Dr. Mettler in New York, who has done quite a little work trying to reproduce it in monkeys and rats, threw up his hands, too. So it's the thing we come back to every two, three or four years when we get a new idea. So far the new ideas haven't been that fruitful. We now discover that it occurs in various places in the world. A related species in Colorado was shown by one of our former graduate students, Dr. Young, to produce the same picture. It's a Mediterranean plant that's been brought here, into the Argentine and into Australia, where it causes trouble too. So far we can't find anybody that's recognized it as causing trouble in the Mediterranean area, so it's been very frustrating.



*According to my notes you had worked on eucephalomalasia in horses and liver necrosis in sheep, coccidioiomycosis of bone. Is that what you've already talked about in the dog?*

That's another infection; that's valley fever, the serious chronic form of it. The massive liver necrosis in sheep was something we saw in the field in the west side of the lower part of the valley here. A very unique sort of liver necrosis (our visitors from abroad have never seen it) We had it annually for a decade or so and then no cases. Last year we had another small outbreak with textbook cases. Why it disappeared for a while we don't know. The only thing it ever related to was to trefoil pastures. I understand there are fewer pure stands of trefoil planted nowadays and so whether this really relates, I don't know.

*You were involved in leptospirosis in cattle?*

This was mostly just characterizing the lesions in the early days of the infection. This was more or less a descriptive work-up of how it appeared in little calves.

*Of all your research, for which projects do you feel you will be longest remembered?*

Probably for characterizing old dog encephalitis and the salmon poisoning work, and probably the star thistle poisoning in horses. We have an entity in recent years in polled Hereford calves that we characterized here; we haven't been able to reproduce it. It's a genetic problem, but it now appears to be world-wide in the breed. We defined the appearance of it but we really haven't answered how come, and this is currently of wide interest. It's probably inborn error in metabolism and some knowledgeable biochemist is going to have to solve that.

*Has accidental discovery or general luck been much of a factor?*

I'm sure it has. I've got a drawer full of things that didn't work. For every notion that pans out, you've got ten that don't. I can remember the salmon poisoning thing.



I became aware, in making a histo-pathologic study of the disease just to find out what was going on, that in these cells were dots. The great occasion of the discovery was when Dr. Gorham, my colleague, went by in the hall and I hailed him in and I asked him what the little dots were. This led to the discovery of the rickettsiae which sort of shook up established rickettsiologists since rickettsiae are all supposed to be insect born.

It's that sort of thing. All the star thistle poisoning horsemen had sort of a folklore association of the horse disease in feeding on these plants. I can't claim discovering that, all I did was find out what kind of a disease it was.

The steatitis in kittens--this was an association with Dr. Gorham and his mink problem. How it occurred in mink had already been explained. I just observed these kittens with yellow fat and thinking of this as a possibility, and from there on it was all downhill.

I have enjoyed good collaborators. Dr. Gorham was my first graduate student; he took a masters right after the war, and is a man of far-ranging ideas. I collaborated with him extensively at Pullman and with Dr. Adler and others down here. I think these are people, these and others, who are very stimulating; they'd get me moving and organized [laughter]. Dr. Adler would come in just to ask a brief question and spend two hours with me on all sorts of wide-ranging imaginative thoughts on what to do.

### Campus Committee-Work

*You have spent a lot of time on committee assignments both within the school, campuswide and professionally. I wonder if you'd discuss some of the highlights of your committee activities?*

I feel I have done my share of committee work. I came at a time when the campus was growing and I probably had more opportunity than the people who are in a larger faculty now. I somehow got on the Committee on Committees and was chairman of it for a year. This was the committee that appointed people to all the other committees.



*Do you remember what year that was, approximately?*

Well, it was probably in the late '50s. In reviewing panels of people to serve on this or that committee, I found out about a lot of people on campus that I wouldn't have known about otherwise.

I did a tour in the early '60s on the Campus Budget Committee; this is probably one of the most prestigious committees I've been on. It took two mornings and an afternoon for week after week. I wasn't the veterinary representative. It happened that we had a series of our faculty on it, but the committee was usually selected for a certain amount of seniority, rank and suitable experience in the UC system. The people were picked to represent large areas, not precinct-like constituencies. When we dealt with everybody on the campus and their appointment and advancement, we depended, as the committee still does, on *ad hoc* committees who were knowledgeable as to what a person was doing and how well he was doing it. And we had to pass on their committee in the final recommendations to the chancellor for his adjusting the men to the money.

This was a very educational committee. Like a lot of these campus committees, you don't feel you're the vet representative; you're above this. As far as the vet school went, probably at the time I was on, we never had any particular problems. I informed the committee about the nature of the work of clinicians (there was no medical school here yet): a busy clinician puts in a lot of clock hours on his feet in the wards, and the kind of research he is very likely to do and probably should do is different from that of the basic science man--the clinician's time is rather more restricted. It had been a little bit of a strain before the committee was informed of the nature of the clinician's work; some of our people had not advanced probably as they should have. But after that, with such continuity as there is on a committee, it wasn't a particular problem.

I served another three years on the Research Committee, and this again was educational. I got to know what people did around the place in the line of research. Our main job was providing small research funds particularly to young staff members, and to provide travel money to people. I don't know if I served the vet school particularly on that committee.

*You were on the Library Committee--was that for Health Sciences?*



This was way back and for a year only, when we had our own library in the building here which was just a veterinary science library.

### School of Veterinary Medicine Committees

In the vet school I served on the Executive committee and I did my three years when it was first organized. I was the first chairman of the Executive Committee, not chairman of the faculty--that didn't come until the early '60s. The dean was then the chairman of the faculty. But this was our first executive committee back about 1953 or so. I guess this would be about the end of George Hart's term or the beginning of Jasper's. We didn't have all the authority that we had in later years (laughter). I'm back on the thing now, twenty years later. This is the committee that speaks for the faculty between faculty meetings, and has some influence.

I've served on the Curricular Committee almost ad nauseum. I was on a special committee in Dean Hart's day where we proposed the changes in histology, biochemistry and physiology which led to the great ruckus. And then I did a three-year tour in the late '50s, and three years more in the early '60s, at times when we were developing and revising the curriculum's clinic years. A lot of curricular work always intrigued me and I guess this is why I kept getting back on to it all the time.

I was on a couple of special committees. One was on the reorganization of pre-veterinary requirements a couple of years ago when we added biochemistry and physiology as prerequisites (that was the chief thrust of it). I was on a special committee on whether we would adopt the pass-fail system rather than letter grading schoolwide, and lost that battle. We were about fifty-five to forty-five against it.

*What was your own opinion on that?*

Well back in the '50s, I think, you could go down the hall and an A meant a certain thing to everybody. We gave maybe fifteen or twenty percent A's (except Andy Peoples didn't give any C's at all) Most people gave about the same number of A's and the same number of B's. I could grade my class, go across the hall, ask Julian in anatomy to look at the same class the year before in anatomy and they would sort out about the same way.



But, I think the letter grades have eroded. We got easier and easier and now we give one-third A's, and a lot of B's; C's are a pretty damning sort of grade.

I was willing to accept a notion of pass-fail and get a little hard-nosed on the floor you put under it. Some of the chicken D's we used to give would fall through the floor. If the faculty wanted to have a few honor grades it would be fine with me. The big problem was how to tell a prospective employer or a graduate school admissions committee how this person really did. Letter grades gave you some semblance of measurement, but a whole lot of passes would't, especially with a class of eighty (or what-ever it was at the time). It is impossible to know the students in a large class well enough to write a paragraph of evaluation. It's hard enough when you get them in groups of six or eight out in the clinic for a week or two. Really, all you could say is that this fellow is outstanding, this one solid-average, and this fellow has some problems--that's about all any grading system will tell you.

There also was this problem of how would they go on to graduate school. Serving on the Admissions Committee you see these transcripts from, say, Santa Cruz. A little paragraph makes it very difficult to evaluate exactly what kind of performance was done on the part of the student. I'm happy I have done my stint on the Admissions Committee and hope I don't have to go back on it soon.

*When were you last on the Admissions committee?*

I did a year from 1970-71. My full tour was quite a long while before that.

*Had it changed in any way from your previous tour?*

Not a great deal. Heavy reliance on grades, as you know, grasping at something that seems to differentiate people numerically, such as animal experience. One asks if this person really shows aptitude and interest, and will he stay with it when he is admitted? It's a very subjective sort of thing. We've talked about putting some grade floor under the group and throwing them all in a box and picking them out at random. The school can hardly hurt because there are so many good candidates now. The efforts of the committee are mostly directed at fairness to the applicants; we could take three classes that would be good and there are a lot of good ones that don't get in.

The return to interviewing--we interviewed when I was first on the committee--the return to interviewing probably has been not so much to pick a good class as to insure that the next fifty or hundred who don't get in have every chance to tell their story. It's rough.

---

Donald R. Cordy



## Expanded School of Veterinary Medicine Teaching

*In that regard, what's the best way to extend the teaching of veterinary medicine in California?*

Expanded numbers you mean?

Yes.

Well, I'm inclined to think a second school is needed. The proposal for the San Joaquin Valley and Southern California clinical facilities are going to require so much support--they all will have to have pathologists and clinical pathologists as well as the clinical people themselves--that it's going to cost so nearly what a second school would cost that they might as well go ahead and establish a second school. I'm sure President Hitch experienced a lot of annoyance or problems with a variety of medical school deans competing. But I think a certain amount of competition is a good idea. If they want to use some different program than our core and track, fine. There are twenty schools for two hundred million people and on this population basis California should have two schools anyway. A few years back, out of every three people licensed in California (newly licensed) we trained one and other states trained two or even three out of four. These states don't like to see their expensively trained graduates going away, so there are various moves to get them to practice locally for at least a few years to avoid training for California.

You can only train so many in one place, unfortunately. I have a feeling that with a class of a hundred now, or ninety-odd, I'm not reaching them the way I did when there were fifty-two--you just get diluted out. You have to section laboratories and you get more removed from the student. The amount of case material that can be generated locally is really the limiting factor. We have a large referral practice, but this is mostly dogs and horses; we get them from all over the state. I suspect that any kind of expansion is going to be so expensive that it's going to horrify the legislature and the governor anyway. But it would cost so little more to have a second school when you consider the problems that arise in scheduling, duplication and so on with having awkward branches of one school.



## Possible Future Curriculum Revisions

*While the crystal ball is out--in terms of curriculum, what courses, if any should be emphasized more than they are? Or, perhaps, what courses are not even taught that should be taught?*

We've had a problem for twenty-five years with, I guess you'd call it, breeds and breeding. Our graduates tell us they wish they knew more about the various breeds of farm animals and dogs and more about their reproduction and nutrition. We've covered them in different ways: we've required courses as pre-vets; we've had them in the curriculum; we've taken them out, and we've moved them around. But this is an area that somehow they should be getting better information.

There's the old problem that when he's in the clinic here, the student doesn't have to worry about cost and so on. But when he's dumped out in practice he learns in a short order about the economics of practice. This is something that academicians, unless they come from a long clinical experience don't have first in their consciousness. This is something that we've attacked in different ways. We've had guest speakers; some schools have had courses in economics and hospital planning and so on. But, really, the old-time, experienced practitioner might be the best person to introduce out people to that.

There was a certain amount of difference of opinion between the basic scientist and the clinician. This has diminished as clinicians become more scientific, and as basic people are dragged out to see real live cases, with our new program there are a number of basic scientists that have gotten involved with, maybe not caring for patients, but with consulting and so on at the hospital. So we've sort of blurred the division that used to occur; we used to compete for time, space, and money.

As far as the scientific material goes, I think it's pretty well covered; there are areas that I'm sure will develop as time goes on. Anatomy has shrunk over the years both here and else where. We used to spend hours and hours on just a little anatomy, and now it's reduced. Some other areas will probably be reduced, others will grow. Pathology, over the history of this school, has been a good example of one that was carefully tended and watered and grew into quite a tree. Some hold their own. Immunology, I'm sure, is an area of future growth, particularly as clinical applications can be made.

We've always had a problem with toxicology--poisonous plants. Should we teach toxicology or should a botanist teach the identification and properties of poisonous plants? That we will do with industrial poisoning--agricultural poisoning--is something that still is evolving.



## Animal Science Vs. Veterinary Medicine

*Is there still a tug-of-war between the points of view that veterinary medicine is more an agricultural science than it is a health science?*

I don't think this is a great problem nowadays. A few of our people have appointments in the Agricultural Experiment Station, and I guess nominally our dean may still report to the vice president for agricultural affairs. I've always said that veterinary medicine is related to animal science as human medicine is related to home economics. Home economics and animal science are concerned with breeding and feeding and management of animals, human or otherwise, and veterinary medicine is concerned with their diseases and their control and management. We necessarily have a foot, so to speak, in animal science since a lot of our early money (before grants, before NIH)--what little we had was from USDA, from the Department of Agriculture (Experiment Station money).

The people who went to the capitol to lobby for us were not the dog and cat owners, but the ranchers. Animal agriculture people hardly ever would reach in their own pocket, but they would go over and lobby very effectively. In some places, Colorado, for example, there is a very nice relationship with animal agriculture in research and so on. After all, we've got four or five million dog and cat owners in California. They're voters; they have some kind of concern and they aren't entirely to be forgotten in our offerings. It's a free enterprise society. If a boy wants to go into the more pleasant hours of an animal hospital in Hollywood and not wade around the barnyard on a cold and windy day, why that's his choice.

Most of us, in our research interests, are deeply involved with food animals and our autopsy service is about fifty-fifty, so there is a little controversy. One is Animal Science-Veterinary Medicine. This is because we evolved from them. The blacksmith in ancient times became the veterinarian just as the barber became the physician.

## Retrospective Thoughts

*You have a number of years yet to go before you retire, but what are your thoughts about retirement? Are you looking forward to it or do you dread it?*



The idea seems enjoyable. My picky day-to-day stuff, I will be happy to have somebody else take care of. I've enjoyed fighting through some things that are, hopefully, improvements. We lost a few battles and won most of our wars. We have a big enough staff that we should be able to follow our particular interests without making our days too routine. Our reading and our research and our advanced courses, are a kind of measure of independent specialization. The department faculty (many of them I helped pick), I've enjoyed their collaboration in many things. We've shared a lot of things in the department rather than compartmentalizing ourselves from each other.

Passing off the chairmanship to Dr. Dungworth was a great relief. I discovered that I had three file cabinets and now I have one that is half full; most of this was continuing responsibility that didn't wear all that heavy I guess. The big things we have decided together, and the little things the chairman determined. Nobody really hankered for the chairmanship--which may be a good sign that we aren't really all that power oriented--so that we finally thrust it upon Dr. Dungworth.



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## Edward Rhode

### Interviewer's Notes:

These interviews were conducted by A.I. Dickman in 1975.

### Curriculum Vitae:

1926 -

**Dean**, School of Veterinary Medicine, UCD; 1982 -

**Acting Dean**, School of Veterinary Medicine, UCD; 1977 - 1978

**Associate Dean**, School of Veterinary Medicine, UCD; 1977, 1978 - 1981

**Chairman**, Department of Clinical Sciences, School of Veterinary Medicine, UCD; 1968 - 1971

**Acting Director**, Veterinary Medical Teaching Hospital, School of Veterinary Medicine, UCD; 1968 - 1969

**Head**, Division of Medicine, Department of Clinical Sciences, UCD; 1967 - 1968

**Professor**, School of Veterinary Medicine, UCD; 1951 -



## Edward Rhoads

## Interviewer's Notes:

These interviews were conducted by A.J. Dickman in 1973.

## Curriculum Vitae:

1926 -

Dean, School of Veterinary Medicine, UCD; 1962 -  
 Acting Dean, School of Veterinary Medicine, UCD; 1977 - 1978  
 Associate Dean, School of Veterinary Medicine, UCD; 1977 -  
 1978  
 Chairman, Department of Clinical Sciences, School of Veterinary  
 Medicine, UCD; 1968 - 1971  
 Acting Director, Veterinary Medical Teaching Hospital, School  
 of Veterinary Medicine, UCD; 1968 - 1969  
 Head, Division of Medicine, Department of Clinical Sciences,  
 UCD; 1967 - 1968  
 Professor, School of Veterinary Medicine, UCD; 1951 -



## Edward Rhode

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### Early Life and Education

*Dr. Rhode, shall we start with the beginnings? Where were you born and something about your environment and your parents, any brothers or sisters, and so on.*

I was born in Amsterdam, New York and grew up on a dairy farm about two miles from that city.

*That's great dairy country, isn't it?*

Yes.

*Is that near New York City?*

It's about 180 miles from New York City; it is in the Mohawk Valley. My father and his brother operated a dairy farm there. I spent a good part of my time as a boy helping on the dairy farm with a variety of chores and work to do. As far as my family are concerned, I have one sister who's slightly older than I.

*What year were you born?*



I was born in 1926--July 25.

*What were your parents' names?*

My father's name was the same as mine, Edward Rhode, and my mother's was Katherine Webb Rhode.

*And your sister?*

My sister is Helen Rhode Brown. She lives in New York State still, but in a different locality--in a small town, Adams Center, upstate near Watertown, New York.

*You graduated from high school then in . . .*

Yes, I graduated from high school. I went to grade schools which were country grade schools at that time, but then to the high school in the city of Amsterdam and I graduated in 1943. I was then offered a scholarship at Union College which was a men's college at that time--now is co-educational--in Schenectady, New York and spent a year there.

My major in the first year was chemistry, although the first year was a general science course. That was during the time of the Second World War when the college calendars were on year-round basis and so the first year, or two semesters, were completed in two-thirds of a year.

### **Veterinary Medical School at Cornell**

I had decided during my time at Union that I would like to become a veterinarian and transfer to Cornell University for one semester of pre-veterinary work prior to entry into veterinary school in 1944.

*What influenced you in that decision?*



Of course, farm background was one of the things; my having worked with animals and particularly interested in the animal part--the dairy part--of the farm more than in the production of grain, hay and things of that kind. Also, my good knowledge of our local practitioner, a veterinarian, in Amsterdam who was a good friend of our family. I knew him and respected him and decided that I liked that career.

*Was he a Cornell graduate?*

Yes, he was a Cornell graduate.

*What was his name?*

His name was Lloyd Moore. My intention at the time I started into veterinary school was to go into practice, probably into an area close-by where I had come from, but that didn't turn out to be the case. At any rate, I entered veterinary school in 1944 and graduated from Cornell in June 1947. They too were on a year-round operation--three semesters during the year. I had matriculated before I was eighteen years old so I was deferred from the latter part of the Second World War because I was a student in what was considered a vital training capacity.

*Would you say something about Cornell, particularly in relation to the type of training that Davis now provides?*

Well, the training that was given to graduates in the 1940s is very different than it is now. Cornell was generally recognized as being one of the best veterinarian colleges at that time, so that I think the curriculum was a good one for the time. It had much more emphasis on large animal activities because most of the veterinarians went into dairy practice. The small animal practice had not developed to the extent that it is now and so the training reflected that. The curriculum was a curriculum traditional for that time and it has been traditional for many schools for a long time since. The earlier years were almost entirely basic sciences, and in the later years clinical.

*How many were in your class?*



I think thirty-five graduated in my class--that's another feature, the classes were considerably smaller.

*How many were on the faculty?*

I suppose the number would have been somewhere around thirty, plus or minus a little bit.

*Were the facilities at Cornell good?*

Yes, they were good, for the time.

### **Post-College Positions**

*Did you go into private practice after graduation?*

I worked for one year with a general practitioner--he was primarily a dairy practitioner--in Newport, Vermont which is in northern Vermont about ten miles from the Canadian border. I spent a year as an associate with him in practice. After that year I had the idea to see if I wouldn't like academic activities better. I wrote to several veterinary colleges and through a professor of mine at Cornell, Dr. Danks, was informed that there was a position at Kansas State College--an internship, as it currently is called. The title of my appointment was instructor in veterinary clinical medicine. I started at Kansas State in August or September of 1948.

*And you were there until 1951?*

I was there until June 1951.

*What did you do there? What were your primary duties?*



Clinical duties of various kinds. Kansas State had a history of employing graduates of Cornell starting with E. J. Frick who was the chairman of medicine, surgery and clinics at Kansas State at the time I was there.

Starting in the 1930s and at various intervals since then, Kansas State had hired junior clinical faculty from Cornell who usually stayed for a year or two and then went on to other things; and I was one of that series of people. Drs. Danks and Leonard, professors at Cornell, were among that group. At the time I was there, John Wheat who is on our faculty here now, was also there. He had come about one year prior to my going on campus.

When I first went to Kansas, there were about twenty-two on the faculty. We had a class of about sixty to teach, so that the ratio of students to faculty was very much different than it is now. The facilities at Kansas State were much less than at Cornell, particularly for teaching in the basic sciences. I wasn't involved in that teaching, but basic science facilities were rather meager.

Ours in the clinical area were reasonably utilitarian. As far as the animal housing facilities, we couldn't hospitalize as many animals or have the kind of facilities we have here now by any stretch of the imagination. But a lot of the practice at Kansas was in ambulatory practice, going to the farms. There were many livestock operations in that area at the time I taught regular classes as well as clinical practices at Kansas State. I was asked to teach with a level of experience that we wouldn't use now in asking people to be in charge of a course. I was in charge of the course at Kansas in therapeutics (therapeutics of both large and small animal diseases) and in charge of a course in physical diagnosis or introductory medicine for all species.

## UC Davis School of Veterinary Medicine

*What brought you to Davis then, in 1951?*

In the late '40s and early '50s there were a number of new schools starting. Among them, Davis had its first class entered in 1948. So, there there were opportunities for people, junior members of clinical faculties, to enter academic areas, particularly in clinical areas. To me Davis seemed a more attractive place in the long run than Kansas did. In addition to that, Don Wheat, a close friend of mine (we worked together during our time at Kansas), had come here a year earlier. He wrote about an opportunity here and I expect that he recommended me to the people here. It was through him directly that I heard about the position and was encouraged to apply, and was accepted here.



*Were you married at that time?*

No, I was not married.

*So you came here then when Dr. Hart was the dean?*

Yes, he was dean.

*What were your duties?*

When I was hired, Dr. Cameron was chairman of the department of medicine and surgery; the department's weren't official, but ... He was changing to microbiology during the interval between my hiring and arriving here. John Christensen was chairman of medicine and surgery when I came.

My first responsibilities were in the ambulatory clinic. I was hired as a large animal clinician to work in the ambulatory clinic. Clinical medicine was much more general at that time and I think I even worked, for a short period of time, in the small animal clinic in general medicine, shortly thereafter. After a year or so Blaine McGowan joined the faculty. He was interested in the ambulatory clinic particularly. There was a vacancy in the in-clinic in medicine rather than the ambulatory clinic; and I was asked to take that and did. I stayed in that work for a number of years.

*Was there a great deal of difference between the student body of Davis and the courses taught here from what you were accustomed to at Cornell or at Kansas State?*

There were some differences, but the curriculum--if one looked at just the descriptions of the courses and curriculum--was organized in a reasonably similar fashion. I think that at Davis, from its inception, the kind of things that people like Dr. Schalm are interested in--that is, developing the field of clinical pathology, and hematology in particular--were emphasized from the start and had a lot more emphasis; they developed a lot more rapidly here right from the beginning than they developed at either Kansas or Cornell. So, that kind of teaching, the emphasis of laboratory diagnostic evaluations, that I didn't do myself but which I benefited from, was an early characteristic of UCD's instruction. As far as the clinical instruction itself, facilities were different and the setting was



different; some of the diseases that we encountered were different and all that. The general pattern of the courses that we taught in the clinics and the rotation of the students through the services of the clinics were reasonably similar to other schools.

*In addition to the clinical work that you were doing, did you teach?*

From my first term here, I was responsible for courses taught in several fields. The principal responsibility at the beginning in lecture courses was to teach a course in diseases of large animals. This involved, at various times, a number of organ systems--not the infectious diseases, but mostly the more general diseases of large animals. I taught a course in therapeutics also; the course is since removed from the curriculum. Then, a little later, I taught the course in introductory medicine. I did the lectures myself and the laboratories with Dr. Cello; this is a course that had been previously taught by Dr. Christensen. The course in introductory medicine was my continuing and major teaching assignment for quite a number of years. But in the first years, I taught several different courses, sometimes a new one each semester.

*Your initial interest then was really in medicine?*

My interest was in medicine.

## Research Activities

*And then, your research interest was primarily in cardiology?*

It became my research interest. I didn't develop a well-described research program until the early 1960s. I did have an interest in clinical medicine in the earlier 1950s and was interested in naturally occurring diseases of various kinds--a few things that were in that time of rather diverse nature: the kinds of things that we saw and had an opportunity to work up in the clinic.

In about 1957 a Professor Joseph Holt came from the University of Louisville, who was a friend of Dr. Peoples and had made arrangements through Dr. Peoples to come to Davis. He was interested in doing cardiovascular studies on large animals, comparative mammalian cardiovascular physiology. And he was interested in finding out about the



function of the heart by comparisons of the heart's function in small animals such as the dog and ultimately smaller ones such as the rat and rabbit, and intermediate-sized animals such as the pig and sheep and goat and then large animals such as the cow and horse. The studies were to find out how the heart functioned as a pump; how strong the pump was and how much it emptied in relation to its filled volume and so on.

*He is a doctor of human medicine?*

He is a doctor of human medicine and a Ph.D. in physiology. And so he came in 1957 (for the first summer) and he needed assistance in tackling the large animals since he didn't have any experience in restraining them and anesthetizing them. I helped him get his experiments done. These involved cardiac catheterization of large animals. So, my interest had been more general, and with that particular stimulus, it became more specific to cardiovascular things.

He has come to California on a number of occasions since. We spent quite an extended period of time the following summer (1958) following up on the things we had started in 1957. I was interested in the techniques that he was using (that I'd learned in part during the times he was here in the summer), collaborated with him in working up the data. Then in the academic year of 1959-60 I went to his laboratory in Louisville and spent an intensive year learning research techniques and methods. At that time my interest as far as research became much more specific as to the cardiovascular physiology and its application to disease states. Following my sabbatic year I developed a proposal which NIH funded so that I could carry on the experimental program a number of years (about ten years).

*What was the amount of that NIH grant?*

It used to vary from year to year. The NIH grant was usually in the amount of \$15,000 to \$25,000 annually over those years.

*And, my notes say that it was to study ventricular volumes relationships?*

Yes, that's right. The way I started with that--Dr. Holt had developed a special application of what is known as an indicator dilution technique. The indicator dilution technique simply stated is that when one injects some kind of an indicator such as a



dye in a flowing stream such as the bloodstream, and this indicator or dye mixes with the bloodstream, if you measure the concentration of the indicator somewhere else in the stream downstream for the time of its presence at that site, you can calculate the flow--that is one way of measuring the flow in the stream.

This is a technique that is used and had been used for a number of years to measure cardiac output. This is a technique that with two simple introductions of either needles or catheters into the bloodstream at a central venous and an arterial site, cardiac output can be measured in clinical human medicine.

Dr. Holt devised a technique whereby on catheterization of the heart and the injection of indicator into the chamber of the heart in either the left or the right ventricle and measuring its concentration immediately on the outflow side (in the route of the aorta in the case of the left ventricle), he was able to calculate not only the flow or the stroke volume with each heartbeat, but because the heart empties incompletely with each beat, he was able to measure the volume of the ventricles of the heart. He also calculated the filled volume of the ventricle in a typical heartbeat, and then the volume of the heart after it had contracted, when it was at the end of the heartbeat cycle; the fraction of the starting volume that the heart empties with each beat was found to be about half under usual conditions and varied depending upon the heart rate and depending upon the strength of the heart's contraction. Dr. Holt was the first to use an indicator dilution technique to measure chamber volume. He first described that about a year before I met him in 1956. About that time other people were injecting X ray contrast material into the heart and then taking a series of radiographs rapidly, taking two planes simultaneously, while the heart was beating and making similar measurements, assuming a certain geometrical shape of the heart. In the period from the mid 1950s through the early 1960s, people were very interested in studying the fractional emptying of the heart and the relation of that to the pressures that the heart developed so that they could study the force of contraction that the heart muscle was able to develop. Of course, the force of contraction in a failing heart would be less than in a normal heart and this had application then to the recognition and the understanding of heart disease.

The particular idea we were exploring was to find a pattern of function, if such existed, for all mammals of varied sizes, whether the heart of a whale or whether the heart of a large horse (we never studied whales, but we studied large horses) would empty with a certain fraction normally; and whether the heart of a small animal, such as a mouse or a rabbit (which is the smallest we studied) would empty more completely or less completely and all that: at what pressures it pumps, and how thick the muscular wall of the heart was in relation to the volume of blood in the chamber. If one studies animals several hundredfold difference in heart weight and in body weight, and then some pattern is recognized, conclusions can be drawn about how the heart or pump works in mammals generally.



Then if you can find certain mammals who deviate significantly from that pattern normally or because of disease, these may be models that can bring you additional insight into the working of the heart.

Those were some of the studies that I pursued. In California we were able to work with the large animals while Dr. Holt was working with smaller animals in Louisville. From there we went on to try and validate the techniques to see if our techniques were accurate or not. The indicator dilution technique we were using used concentrated salt solutions as the indicator. In measuring concentration we used an electric conductivity cell. The principle involved conduction of the electrical current in blood in the cell. With an increased salt concentration the resistance to the conduction of an electric current was lower. This is a technique that, in contrast to the measurement of concentrations of dye, could be done very quickly. So, we had a technique that would come to an equilibrium within a fraction of a heart's beat, a requirement if one is to measure ventricular volumes.

My participation in the research included getting information on large animals, cattle and horses. We did this on anesthetized animals at first and then later on awake animals catheterized under local anesthesia. Then I looked for exotic animals and was fortunate to work a summer in the San Diego Zoo.

*What type of exotic animals?*

We had a lion one time and a leopard...

*Unanesthetised [laughter]?*

They were all anesthetized. Then I became interested in what happens with cardiac function during exercise and developed a way in which goats trained to run on a treadmill could be catheterized and measurements taken during exercise.

Dr. Holt has gone on to become interested in the comparative mammalian structure and function of the arterial and venous systems. We are trying to define a pattern or relationship in numbers of arteries and their branches, the size and the thickness and length of the arteries, what sort of patterns are common to all mammals. I have worked more recently with him on getting casts of arterial and venous systems under normal pressures in animals. We make plastic casts by injection and then dissolve away the tissues and get plastic casts of the whole arterial system or that of the kidney and other organs and measure the distance between branches and the diameters and so on.



Dr. Holt spoke to me this morning on the phone. We are preparing a paper on renal glomerular hemodynamics in mammals including the horse and cow. He is planning to come out this summer and add to that study, and do similar studies on venous casts. I'm particularly interested in measuring pressure differential or drops in the aorta as a way to determine the acceleration of the blood flow by the heart in the aorta as an index of the strength of the heart's contraction. Our work is continuing, certainly less time spent on it on my part than it used to be, but still doing something.

*Were you married at the time of your initial work with Dr. Holt?*

Yes, I was married in 1955.

*Who did you marry?*

Dolores Bangert who was a native of Sacramento, California.

*Do you have children?*

Five children.

*And their names and ages?*

David is the oldest and he is now eighteen and a freshman here at Davis in the College of Letters and Science. Peter is the second, and he is seventeen. Paul is the third; he is sixteen. They are both in high school in Davis. Robert, thirteen, is in junior high and Catherine, eleven, is in the sixth grade.

*When did you work with Dr. Hawthorne at Howard University?*

The second sabbatical I had was in 1967 and I was interested in techniques that Dr. Hawthorne and his associates were using. Dr. Hawthorne is a cardiovascular physiologist also, at Howard University in Washington, D.C.; he was using different kinds of



techniques to measure changes in diameter and circumference of the heart. He had developed methods to measure instantaneous changes in the heart's diameter, circumference, and length during the cardiac contraction; so I went to his laboratory to learn these. These involved putting little rubber tubes around the heart at certain levels or sewing coils on the heart and then inducing an electric current say, from a coil at one place at the apex of the heart, which could be picked up on a secondary coil placed around the aortic arch; as the heart changed length during the heartbeat, the strength of the electrical current at the aortic root could be measured--it is related to the distance from the coil at the apex, therefore the length of the heart and the changes in length during the cardiac cycle could be determined.

The little tubes around the heart were either rubber tubes or silastic rubber tubes that were filled with mercury and, again, a current was run through these. The resistance in the circuit is related to the length of the rubber tube. When these gauges were placed circumferentially around the heart they could be used to measure circumferential and diameter changes during a cardiac cycle. When you stretched the gauge out, the mercury column was longer and thinner, and so the resistance of that mercury column to the transmission of electricity increased; when the gauge was a lesser length and the mercury column was shorter and thicker it had less resistance to the passage of current. This was pretty much a linear relationship through the changes in length that we were measuring in the heart so that then one can measure the changes in circumference during the heart cycle.

We were measuring dogs primarily and doing surgery on experimental animals, placing these gauges, and then having them recover. In some we did acute experiments with open chest animals and measuring directly. The general thrust was to place these kind of gauges on the heart and have the animal recover; then several days later, when everything was normal, we would measure them over a period of time and see what happened.

I didn't really ever follow all of that up with similar kinds of experiments here in large animals although it had been my intention to do so. I got involved in administrative things more after coming back and I didn't pursue experimental studies as vigorously as I had expected.

*Did you also act as consultant to the NIH on an emphysema project?*

I was peripherally involved in the emphysema project here. But, I was interested in that and kept up an interest, but not an active part as an investigator on that project. There was quite a large group of people--Walt Tyler was the principal investigator most of the time--Jerry Gellespie was collaborator and worked on the project extensively when he



was a graduate student; Murray Fowler, who is on the faculty here, worked in developing some of the thoracic surgical techniques. There were a group of people who were the medical investigators from the navy who were involved in it. Dr. Crenshaw, a thoracic surgeon in Oakland, was interested and very active in it. So, this was a group project investigating pulmonary emphysema in horses as a model for pulmonary emphysema in human beings, and studying principally whether destruction of the bronchial artery (which is the principal nutritional artery to the lungs rather than the artery that picks up the oxygen in the blood) will produce pulmonary emphysema. They were studying the pathophysiology of pulmonary emphysema as it occurred in horses and experimentally whether bronchial artery destruction would produce pulmonary emphysema in horses.

*Are there any other research projects in which you've been the principal?*

Well I guess we have counted most of the ones that I principally have been involved with: the study of ventricular volumes and the relationship of that to exercise state to the anesthetized state and so on; then recently, although I haven't been very actively involved in research, we've been making some studies of clinical cases of cardiovascular disease that we've encountered.

## Teaching Activities

*To what course would this apply: "A new concept was a relationship between disease symptoms and pathologic physiology that causes them. Anatomy, physiology, pathology and chemistry plus lab findings are used"?*

I think you're referring there (and I don't know just where you did get that particular observation) to the way that I conceived the organization of Introductory Medicine, course 103.

*Well, this concept of yours seems to me to bridge pathology, physiology and biochemistry with medicine and therapeutics.*



Well, I think so. Actually clinicians in any of the fields of medicine now have to have an understanding of basic processes in all of these areas--in biochemistry and physiology--in order to understand how disease processes develop. One can't separate clinical sciences and basic sciences into compartments; that is done to the detriment of the program in some schools, or at least there is a greater separation than there ought to be. One of the things that I have been interested in, and I think we have succeeded reasonably well, is to bridge that gap here in our curriculum.

*This also was involved in the self-study and in the subsequent curriculum changes too, was it not?*

Yes, this was part of it.

*Is 103 still being offered?*

No, 103 was canceled at the time that we revised the curriculum; portions of it appear in several places. We're trying to introduce concepts of physical diagnosis (the diagnostic techniques themselves) in some of the organ-system courses and then in the course of clinical techniques, and a general introduction to the signs and symptoms of pathophysiology and so on that involve each organ system is incorporated in the organ-system courses now, so that we don't teach a course in the general introduction to medicine.

Bob [Robert M.] Cello, Peter Kennedy and others of us had discussions starting from our early times here of changes we wanted to introduce in teaching clinical medicine. We're concerned that in our instruction at Cornell and elsewhere, one would be taught that here is a particular disease and when you see that disease, X-Y-Z-A-B-C happens. If all of those things happen, a single one of which may be called pathognomic, that is what the disease is--kind of a thing that one can check off the various typical symptoms and come up with an answer and that's it.

Disease processes are somewhat different than that; they're progressive in an animal. The appearance of a disease and its symptoms in an animal depends upon the time you see the sick animal in the course of its disease. One must appreciate too what the course is likely to be. More than just making diagnosis that one can put a name onto, you need to understand what is going on; so the reason that you really need to know pathophysiology is to understand the abnormal processes at work. If you can understand them, then you are prepared to deal with them and tackle them in the right kind of way, rather than to just check off a group of signs and say this is the name of the particular disease that the animal is suffering from.



*How did you teach a professional student the techniques of diagnosis? Did the same students from the course in medicine go into the clinic?*

If we can go back to the time that I was teaching the introduction to medicine and the sequence of courses as they were taught then, introductory medicine was the course that was taught either at the beginning of the junior year or as it was placed later on, at the end of the sophomore year--most of the time it was the beginning of the junior year. It was the course where the students were introduced to techniques of physical diagnosis, the diagnostic procedures that one would employ in making a physical examination on an animal; and also, the pathogenesis and pathophysiology behind the major signs and symptoms that one sees in a diseased animal. We didn't delve into very much detail about specific diseases because the material on that followed in later courses.

But, the general approach that we took and that Bob Cello and I had been quite enthusiastic in pursuing at the time was to emphasize pathophysiology and the real meaning in terms of what is wrong basically with the operation of the organ systems to produce disease symptoms such as cough or dyspnea or pain (rather than just number all the diseases in which they occur as a check-off kind of thing) and to come to some understanding as to how they occur and how they might progress over the course of the disease. Then, in order to teach how one does a physical examination, and we emphasize the cardinal signs of disease, the pathophysiology, how one recognizes signs and what the important symptoms may be (going organ system by organ system in the lecture portion of the course which I taught by and large). Then Bob and I would teach the laboratory. The class numbered about fifty-two at the time and we taught in divided sections so that we were teaching in numbers of students--about twenty-five or twenty-six. We would take animals from the clinic who were diseased, who were available at the time and may or may not represent the particular kind of disease that we were discussing in lecture; although if we had such cases we would use them--animals that showed typical signs, students could or should recognize. We would have the students go to the wards and look at those animals and make a physical examination of them, and then come back to laboratory for discussion of them. We would also try to do demonstrations of how one goes about examining particular organ systems in addition to this selection of cases which showed the particular things we were interested in seeing in the laboratory setting.



*One thing that I'd like to get clear personally: you said the students then would make their rounds and would look for the same kind of diseases that*

...

Oh, in the course in introductory medicine?

*Yes. Would you make the grand rounds with the same students?*

No, we did not make the grand rounds with the students in that class. We said we know about half a dozen cases or five cases today which show the kinds of things we want to talk about and have the students understand or perceive. So, at the start of the laboratory we would say, "You go and look at cases in ward such and such, cage number such and such, and make a physical examination particularly carefully on this organ system," or something of that kind. So, the twenty-five students may have four or five or six things to do. They'd go in small groups and do them and then come back an hour and a half later or an hour later and we'd discuss them--that was the way we handled that.

This was at a time in the students' study before they were actually on a daily basis in the clinics. This was an introduction to clinical medicine for them--this was the way we did it. The cases themselves were treated and assigned to senior students and were being treated by them.

*I've heard that you have a reputation as an outstanding diagnostician and that many referrals come to you for that reason. Is it very difficult to transmit this skill to a student?*

Diagnosis, of course, is problem-solving and there are several parts to it. A diagnosis is made by deduction. One has to teach completeness and care in getting all of the information that is available from the client by way of taking an animal's history and then knowing enough to form an opinion about what the possibilities are. Then care must be taken to see that one does a complete and thorough examination and finds out all about the animal, whatever species it is, that one can at the time. Selection of laboratory tests is likely to be most useful in getting further facts.



*Given all that, given the thoroughness and the appropriate techniques, is there something beyond all that that some people have and some people don't?*

That individuals have?

Yes.

I expect some people are more able than others in various areas. I think anyone can ...

*Does intuition come into the picture? I guess that's what I'm trying to ask.*

I suppose that one may have intuitive hunches as to what is wrong, but they aren't just a chancey kind of a thing. I think that intuition is based on people's previous experience and a putting together of a variety of facts which may be sort of subconsciously done, but which if one looked at it, would have some logical basis.

*In other words, the element of intuition then is based really on informed observation?*

That's my opinion about it.

*Do you ever get the urge to ask the animal what's wrong with it [laughter]?*

You can't do that directly, no! But, on the other hand the animals don't tell you untruths either.

*Didn't you develop a relatively new method in diagnosis in connection with liver disease?*



I worked with Charlie Cornelius and Don Wheat--to apply the bromsulfathalein (BSP) clearance test to liver disease diagnosis in the horse. This test was used in human medicine as a way of determining clearance functions of the liver by the excretion of that dye by the liver. Charlie Cornelius had the original thoughts of applying tests that were then coming into use in human medicine to application in veterinary Medicine. We were the clinicians who did that and helped in the interpretation of them.

*Have you and your colleagues also developed a new technique in applied equin serology?*

Yes, I worked with Clyde Stormont [professor of Immunogenetics, Vet Med Reproduction, UC Davis] years ago. He had previously done blood typing on several species of animals. Of course, he's world renowned for his knowledge of serology in animals. He was interested in determining some of the blood type antigens that occur in horse red blood cells, and I did some clinical work injecting the horses and collaborating with him in getting information that described some of these blood types. I didn't carry that much further with him, but Clyde has continued to develop this information in horses. He's done some work subsequently on hemolytic disease in newborn foals and the application of knowledge of blood types towards those kinds of diseases where red blood cells are destroyed.

*What other techniques do you use in labs? Any other techniques of your own that you have found particularly effective?*

I don't know that there are any ...

*Do you use tape recordings?*

... that are very unusual. Most of the laboratories that I have taught have either been involved with case discussions or demonstrations of clinical material and so, yes, I have used recordings of heart sounds and that kind of thing. We have equipment that will play heart sounds so that we can demonstrate them, both normal and abnormal, to a whole class at one time; and also, through an amplifying system which shows on the oscilloscopic screen a phonocardiographic representation of heart sounds the students can see and hear sounds at the same time and get a better appreciation for the timing of the various sounds in the cardiac cycle.



Most of the laboratories that I teach now in cardiovascular diseases are an attempt to correlate physiologic information, heart sounds and things of that kind, with abnormal cardiovascular function and build the students' understanding of the disease processes in an animal.

*You get your abnormal sounds by distortion or do you actually ...*

No, we have a limited supply of abnormal sounds that we have taped from cases here. We now have a better tape recording system we've just recently purchased so I'll be interested in adding to that. Some of the abnormal sounds we've used have been taped from other veterinary schools and we've purchased tapes or the records and used them as illustrative material. Or, we have animals that have abnormal sounds that are animal patients at the particular time and we bring them down and amplify the heart sounds from them directly and play them.

*Just as a matter of interest, how does the heart sound of the horse compare to that of the rabbit? I suppose there's a difference in volume, but ...*

Well, the difference in volume isn't all that remarkable. I'm sure that the energy of the heart sound is considerably greater in a horse than in a rabbit because of the size of the heart; but the heart sound has to be transmitted through the chest to the outside of the thorax and so the audible sound that one hears with a stethoscope at the usual locations for listening are not that greatly different in intensity.

The small animals have very rapid heart rates and the horse as a large animal has a slow heart rate so that the first real difference is the heart rate and the rate or timing of the heart sounds within a heart-beat.

*What other courses have you taught in addition to the ones you've mentioned?*

To recount from the earlier courses, we had a course that was called Clinical Conference; it was a rounds course that in the earlier days of the curriculum had the format of a grand rounds--that is to say, all of the senior students were in attendance and from time to time often the senior students were the ones who presented the material.



The junior students were also there and the faculty, including some of the basic science faculty, were expected to be at this rounds. It was conducted in the auditorium in Haring Hall. The auditorium was built with the intention of bringing animals into that room so that they could be observed. When the auditorium was built the concrete floor was made so smooth that it was too slippery and difficult for large animals to stand. The person in charge of this clinic conference varied from time to time, but I had major responsibilities in developing it or being responsible for it for several years.

Later on I taught a number of courses. Of course, I was involved in clinical teaching throughout; at first in general large animal medicine in the hospital in-clinic and then more recently in cardiovascular diseases of all species. I have been teaching in the organ system courses now and the cardiopulmonary renal course, the cardiovascular disease segment as it is organized now--Veterinary Medicine 225--and have minor responsibilities in Veterinary Medicine 125 which is the normal cardiovascular pulmonary renal course. I have taught for some years a course with Dr. Milt [Arthur Hamilton] Smith in the Department of Animal Physiology a comparative physiology course on respiration and circulation.

*Is this 120?*

This is Animal Physiology 120B, and my part has been comparative physiology of circulation. First it was an alternate year course and then more recently it's been given every year. For the last two years I have shared the circulation part of it with Jack Goldberg who came onto the faculty about two years ago.

*Any new concepts from that course?*

It's a very interesting course to teach. I'm really not a comparative physiologist. I started out to be interested in mammalian cardiovascular physiology and comparative mammalian cardiovascular physiology, and started teaching the course from that rather limited knowledge. So I have had to do quite a lot of studying in order to understand mechanisms of circulation among the lower vertebrates and the invertebrates. It's helped me just by the fact that I have had to do a lot of literature review in order to teach the course; it's helped me to understand circulatory mechanisms in general much better.



*You're both a professor of medicine and a professor of physiology, aren't you?*

I'm a professor of animal physiology and I was given that title because I was teaching in the department in a course of comparative physiology.

*That's a very interesting combination, I would think.*

The title is nonsalaried in animal physiology, but they have given me a courtesy that I've had for I don't know how many years, since some time in the mid-1960s.

## Curriculum Development

*Dr. Rhode, can you describe the major curriculum changes which have occurred from 1952 on up to the core-track program?*

I don't know that I can describe them all.

*Just the major ones.*

All right. In 1952 we were on a curriculum that was a traditional curriculum for most of the schools, I think, where the courses in the first year would be systemic anatomy, gross and microscopic with embryology, and then systemic physiology, later on following with courses in microbiology, pharmacology; and in the first year also a rather extensive course in biochemistry. General and special pathology would come in in the second year, and these courses--all of microbiology, parasitology and so on--would comprise what were considered the basic science disciplines which were taught without the student having any exposure to clinical practice or clinical medicine and surgery during those beginning two years, except as they might handle animals in some of the animal laboratories in systemic physiology and so on.

Then, during the remaining two years in our curriculum, clinical subjects began with a course in the introduction to medicine and then proceeded to medicine, the diseases of large animals and the diseases of small animals, and surgery in a similar fashion, clinical pathology, and then, finally in the fourth year, the clinical practices for the students.



Well, I suppose a lot of change occurred in a usual way by the addition of new material to each of the courses as the new material became known in those fields; a great deal of curricular content goes on and has gone on regularly in this school and elsewhere without the catalog course description or time devoted to a particular course being changed.

One of the changes that we made at about 1960 I would guess it would be, was that we changed some of the approaches to teaching medicine by abandoning courses in large animal medicine as such and small animal medicine as such, instead teaching according to organ systems and teach comparatively about medical diseases affecting all the common mammalian species--the avian species were dealt with separately. And about that time also, or a little bit later--maybe it was in the later 1960s--we realized that our curriculum was becoming very full and we were teaching--adding on credit units--twenty-one, even as high as twenty-two units in some of the years. And so, there was a curricular revision to reduce the curriculum in credits to what we thought should be a full load of about seventeen units per quarter--not really reducing the coverage of the field that we expected, but to just free-up the curriculum so that there could be more time for and emphasis on independent study on the part of the students rather than being in attendance in lectures and laboratories all of the time.

Then, in the late 1960s and early 1970s we did begin a self-study of the programs in this school, which has resulted in quite a substantial curriculum revision now taking place. We're in the third year of its implementation--the junior class being the class that was the first class in the new curriculum. In that we have tried to introduce some clinical material earlier in the curriculum by the use of case discussions or rounds to first- and second-year students. We had experimented with it a little bit in the old curriculum in the last few years, and we found that this was a very popular way of introducing material and showing the relevance of some of the basic science material that the students thought probably was not really necessary in veterinary medicine in some cases before, so that we are teaching rounds courses, clinical rounds in the first two years. We're teaching a course in hospital techniques and a course in orientation in the first two years; orientation in the first year, and hospital techniques or clinical practices in the second year where we teach physical diagnosis and principles of restraint, and some of the diagnostic procedures that the students will need to know. And then we're teaching clinical practices by a general rotation through the various services of the clinic in the third year, and an elective track program in the fourth year.



## Organ System Format

We have also changed the format of our courses and the way we are presenting them. Whereas we once had presented courses according to the discipline involved--anatomy, or systemic physiology, or biochemistry--now we're trying to present courses with an interdisciplinary approach arranged by organ system, if the particular situation will allow it. So, we have courses where we're bringing anatomy and physiology together as it is pertinent to describe the function and structure of a particular organ system, and then we have another series of courses where we bring medicine, surgery and pathology, and applied microbiology and pharmacology together in presenting abnormal organ-system function particularly, and diseases that involve each organ system.

So, our coursework in the curriculum as we presently have developed it really involves the multi-disciplinary approach, with a number of instructors in each course all trying to fit their materials together to put together a story of how organ systems function and are made up, and then finally, how organ systems are affected by disease, what the disease manifestations are and what pathophysiology of the disease might be, including the management and therapeutics of the disease. These are several major changes that we've made quite recently.

### *How do the instructors like it?*

I suppose the acceptance by the instructors has varied; some instructors are very positive about it. It requires additional instructor time I think because the instructors need to know more surely where their instruction fits in with other people's instruction; so they must attend the parts of courses other people have given. I think this has reduced some of the redundancy and has allowed for a better communication between instructors so that the instruction can be put together in a better way. And, I believe, most of the people have found what we're doing has positive value. In many cases the instructors have had to devote a good deal more of their time to teaching activities, and this is particularly so as we've emphasized or as we have introduced more clinical teaching which tends to be teaching to a small group of students. As that has been introduced into the curriculum, it has required a greater effort on the part of the instructors involved.

The instructors who find it easy to work together in teams have found the thing working very satisfactorily. Those who would like to present the material from a disciplinary point of view, or would like to have an opportunity to develop a whole



subject by themselves and to present the philosophy of the way they see it, to complete the whole subject, I would expect they found it not as good as they did on the old curriculum. But, for the most part, I believe we're achieving better results than we were with the other curriculum.

It really isn't quite as simple as to say that curricular structure is associated with good or bad results; it's really the will of all the instructors themselves which makes it good or bad under any structure--that's maybe the overriding, important thing.

### Core Track Program

*As I understand it, the self-study resulted in something that you call the core track program?*

Well, that's right. We've organized our curriculum according to a core program and a track program. Core represents the three years, or essentially three years, of instruction to the DVM students, that all of the students must take. It attempts to provide the information on the basic biological processes as they apply to veterinary medicine, and also on all of the disease states, the method of production of disease and the control and management of disease that we feel is important as a core of information for all veterinary students to have.

Then we have developed a number of elective track programs for the fourth year, where there is some course work involved, advanced lectures or laboratories in particular, subjects usually related to the kinds of practices that the student intends to enter, but can be related to other disciplines or research activities too, and then a clinical program which emphasizes the kind of practices that a student expects to enter. So, we have an urban practice track, a large animal practice track, a mixture of those two for those who expect to go into general practice. We have an equine practice track for those who expect to enter equine practice, and a food animal medicine track for those people who want to go into medicine as it involves livestock production and health management in large livestock units. We have a zoological track for those who want to enter laboratory animal medicine, or zoo and wildlife medicine.

So, these tracks are designed, we think to bring the students into a better state of readiness to enter practice and to contribute in a full way in practice upon graduation. They aren't designed to train specialists for these kinds of practices; there isn't time to do that.



*And so the track, then, does not affect the students until the senior year, is that correct?*

Essentially so; the student must select the track in the middle of the junior year; they start a limited number of lecture courses, four or five credit units, in the spring quarter of their junior year. But, the major portion of the track program is reserved for the senior year.

*Is there some flexibility if he changes his mind regarding his track selection?*

The longer a student goes into a particular track program, the less likely he or she will be able to change. There are required courses with each track program, and we expect that a student who might go into an exclusive large animal or an exclusive small animal track, who then decides at some time not too far into the program that he or she wants a mixed practice track, well then that change can be made quite easily. On the other hand, food animal medicine has a larger amount, and fairly specific course work in animal production, in animal nutrition, agricultural economics, in herd health medicine and so on. After a quarter or so, in another track, it would be very difficult to change into that program; so this varies a little bit from track to track.

*The courses that you've mentioned in the track program--have some of these courses been added over the years? For example, I'm thinking of wildlife disease problems for zoo medicine, exotic pets, and pathology, and fur-bearing medicine?*

In many cases new courses are being planned to be put into them, and so there's new coursework that will go into the track programs as they are planned now. Some of the courses, for instance wildlife medicine, and zoo animal medicine, have been given as electives to students among the limited number of opportunities to take electives in our old curriculum in recent years, and are courses that Dr. [Murray E.] Fowler, in this case, has given for the last three or four years. The course will be changed slightly and incorporated in the track program now.

It's only, I guess, five or six years now that we've had any problem at all in zoo animal medicine or wildlife animal medicine--not all of the veterinary schools do at the present time, but there's quite a lot of interest in it. Fowler, who has always had



some interest in this field, was a clinician in large animal medicine and changed his interests and devoted his time exclusively to zoo and wildlife animal medicine, only over the past half-dozen years when Dean Pritchard allocated a position for that particular field. So, this is an example of adding new fields of activity to the veterinary curriculum, and our total veterinary program here.

More recently, Dr. [Livio G.] Raggi has started to work in the field of aquatic animal medicine or aquatic medicine. This is not a well-developed field in this country. He plans, I believe, to offer a course soon--no course has been offered in aquatic medicine up to this time, but it will be soon--and I suppose as a small part of the zoological track. We'll be doing a small amount of teaching to veterinary students who wish to take these courses, and then we'll be trying to begin to develop the field for graduate students and others who may wish to enter that.

*Are there still, even with all of those, some neglected areas? For example, genetics or bio-med engineering, basic or clinical nutrition?*

There are some areas where we're understaffed, I think, and need to have new faculty. The ones that you've mentioned, we do have people in nutrition here; we do some of the teaching in conjunction with people in the Department of Animal Science. We've emphasized less the applied nutrition or nutritional diseases I think; we need to augment that.

In the field of genetics there is, of course, a well-recognized genetics department on campus. Students who do their pre-veterinary work here take a course in basic genetics that is given on the campus. We do a small amount of teaching in genetics in the professional curriculum, and as I've already mentioned, Dr. Stormont, as a cytogeneticist working with the genetics of blood types and things of that kind, is a world-reknowned authority. We do feel the need of further developing a field of medical genetics--that is genetics as it applies to some of the hereditary diseases of animals. This is not well developed in any veterinary school in this country except the work that Dr. Patterson is doing at the University of Pennsylvania. There are probably a number of genetically related diseases in animals, some similar to known hereditary diseases of human beings, that have both economic importance on their own in animals; they are also good potential models for the study of those entities to be applied to human medicine.



## Other Aspects

*How do you emphasize or how does the curriculum emphasize self-education and continuing education, and the appropriate use of para-medical people in private practice? Is there any way you can get a handle on those things?*

Of course, a good curriculum should teach students how to study and how to learn, and encourage the kinds of things where the student would be interested in learning and solving problems independently. I think in many ways our curriculum with the scheduled lectures and the laboratories, and in the homework assignments that are associated with them, may not foster this kind of study.

It may foster, on the other hand, the kind of studying to meet particular objectives or tests that are given with the course. We hope that by the proper stimulus and kind of testing, the problem-solving kinds of tests, the correlation of this clinical material, and particularly the way we present clinical medicine, we can encourage the students to go to primary literature to look up things, to realize the value of independent study, and to make the correlation of the various subject materials through the study that is associated with working out a case so that they will be encouraged to continue to do that after they graduate. But this is one of the problems that we have in accomplishing this--I don't know that we're always successful in doing it.

*When you mentioned math and calculus, I wondered if there's going to be any need for a student to know anything about computer science and data processing in the future?*

I suppose so. I don't know, of course, in veterinary practice what the need will be in this area. In many of the fields that veterinarians enter it will be important to know about computers and programs and become familiar with working with computer applications. Drs. [Gaylord M.] Conzelman, [Gerald] Ling and a few others on our faculty are developing some study sets that involve information banks of clinical data and normal values that are placed in computer storage on campus: We then prepare problems, taking case material that is typical of certain disease entities, and ask the students to make analyses of these problems as to the diagnosis, management and treatment of the case. We're using some computer-simulated case analyses now in our teaching program. To that extent, students need to be aware of [ald] Ling and a few others on our faculty are developing some study sets that involve information banks of how the computer operates, and be able to get data in and out of the keyboards much like the one where you operate a typewriter.



## Pre-Vet Requirements

*What about pre-vet studies? Have there been changes in these requirements?*

Yes, at one time we had what we called the pre-veterinary curriculum which was two years in length and was a curriculum for undergraduate lower-division students that had the prescribed courses that one needed to take.

*And led to a B.S. degree?*

Well, the pre-veterinary curriculum as such did not lead to a B.S. degree; it led to the meeting of the qualifications to enter veterinary school. Then, if a student did not gain admittance to veterinary school at the end of two years, he or she would transfer from the pre-vet curriculum into another undergraduate curriculum such as animal science and get a B.S. degree in that. Or, if they entered veterinary school, they would get a B.S. degree in veterinary science at the completion of two years in veterinary school.

Now our minimum requirements are three years and we have no longer a designated pre-veterinary curriculum, although we have required courses that students who want to enter veterinary school must complete. We've added a year's study to the pre-veterinary requirements and very recently our faculty has voted to add to this a basic course in biochemistry and a basic course in systemic physiology. These will be applied for veterinary students who enter in the fall of 1976. So, the pre-veterinary course requirements have been enlarged about three or four years ago, extended from two years to three years, and now spelled out a little bit more specifically.

*I understand that several schools of veterinary medicine require some mathematics in their pre-professional college but that you do not. Is that correct?*

Yes, that's correct. I don't know how many do; there are some that require an introductory course in statistics, and maybe one or two who require calculus. But I



don't believe mathematics is required by a large number of veterinary schools. My personal view is that an introductory course in calculus would help veterinary students to understand some of the material in systemic physiology and biochemistry better, and many of our students do have such courses; but we do not require it.

### Veterinary Medicine Teaching Hospital

*What are the ways you're involved in the VMTH, the veterinary medicine teaching hospital? I've been involved in several ways over the years. What we now know as the VMTH was originally part of the clinical program of the Department of Medicine and Surgery; that is the clinical facilities and animal patient responsibilities were part of the program of that department and the teaching of clinical medicine. The teaching of the laboratory aspects in clinics were the responsibility of pathology or clinical pathology at the time.*

Shortly before the teaching hospital was occupied but at the time that it was being planned, we developed, under Dean Pritchard's initiation, plans as to what the organization of the clinical practice ought to be, and the concept of the veterinary medical teaching hospital was conceived. The organization would then serve as a laboratory for teaching all of the clinical activities related to the veterinary program.

Bob Cello was the first director of the teaching hospital; when he was on sabbatic one year in 1968 or 69, I was the acting director when the hospital was still here at Haring Hall and adjacent structures. I was department chairman and acting director at that time.

John Kendrick was the original chairman of the building committee and when he left that chairmanship I was chairman of the building committee during the working-drawing phase and a reducing-in-scale phase to fit the budget phase of the teaching hospital. I had major roles at one time or another in planning the physical facility and earlier programs.

*Do you recall any of those building-planning details?*

Sure, I recall a lot of them. We had lots of sessions but the early concept was to plan a teaching hospital and several academic department buildings all at once, so that in addition to the teaching hospital the faculty offices and laboratories of the clinical departments would be located all at one site if not in one building.



This became a building that was too large in scope and so after the original project planning guide was prepared at that time, and before very much more had been done, we were asked to reduce the scope so that we were dealing with a teaching hospital that would just take care of the teaching hospital's needs. The faculty offices and laboratories and everything else were to be in a building that was to come along a year later. This still has not come.

I worked quite a great deal during the final years of planning with Cliff Jay who was head of the architects and engineers on the campus at that time, with Mark Daley who was the project architect, and particularly with John Funk who was the consulting architect for the building and the people from John Funk's office. Mr. Funk himself designed the building and I was responsible for representing the interested faculty in the school and seeing that the working drawings did reflect what we wanted to have in the building plan.

*Has it done that pretty well?*

Yes very well, but there's some remodeling going on in the building and there are changes in concepts in the way we think things should go. The curriculum has changed quite markedly since the building was planned. There are many more students; now there are two classes of students there where we had planned the building with the older curriculum in mind when there was a lesser population of students.

One of the major handicaps that has been apparent from the beginning is that the teaching hospital will only work well when faculty offices and labs for faculty who teach in the hospital are close to the hospital. If the faculty office, laboratory and teaching building were close to the hospital, the students would be in that a part of the time and the faculty would be in that a part of the time, too. So, part of the problem involves the fact that the teaching hospital is one phase of all of the things that go into the activities of the school and it's located at one site somewhat more than a mile distant from here.

But, yes, the teaching hospital has been, I think, a building that by-in-large has worked the way we wanted it to and has been a good functional building and a very well-equipped hospital.



*Can personnel get something to eat anywhere near there or in the hospital?*

Only through the two vending machines that are there. We've tried to get a cafeteria; Bob Cello has tried hard to get a cafeteria of one kind or another there from the beginning, but it's always been that that was in the process of planning and would come at the time of Med Sci I or Vet Med II. Since the very beginning we have been planning to add increments to the veterinary medicine facilities on that site. Originally we'd intended the next increment to be a year after the hospital was opened and then, of course, there's been slippage and problems in getting it funded.

*What was that called?*

Well, it's been called Vet Med II, and still is.

*Vet Med I was the experimental animal . . . ?*

No, it was the teaching hospital. Vet Med I, I guess, really may be both the teaching hospital and some of the experimental animal facilities that we built at Armstrong. In my thinking, though, I guess Vet Med I has always been the teaching hospital. Federal matching money came for research purposes when the teaching hospital was built; the federal government was giving matching money for research at that time and not for teaching. We built many of the experimental animal facilities at Armstrong with this matching money for the recognized portion of the clinical research program that the veterinary medical teaching hospital was thought to have. Soon after that, the federal granting agencies then had matching money primarily for teaching. We never did manage to get both federal and state support lined up at a proper time to get veterinary medicine in it, too.

*So the hospital then and the experimental animal housing is all?*

As far as the federal granting agencies were concerned, they were part of the same project, yes. The people who were planning the hospital were a separate group from those planning the experimental animal facilities.



*Are there any new vet med facilities presently under construction?*

No, there are none. We had been planning and re-planning Vet Med II; there are architects appointed to do schematics and preliminary drawings and we're quite hopeful and waiting to see if funds won't come through on Vet Med II so that working grounds and construction can be started this next year.

*What will that facility provide?*

That facility will provide multi-use laboratories for the second- and third-year classes and the fourth-year class who need laboratory space (they don't need very much laboratory space because most of their courses are clinical). It will provide what we're calling clinical teaching laboratories which function both in teaching and in clinical research, and will allow an expanded clinical program in the specialities of neurology or cardiology or ophthalmology, and will then provide the place where case workups can be done. When they're not used in teaching, these areas can double for use in research activities.

Vet Med II, as it's currently planned, provides conventional faculty offices and laboratories and I think it will house about fifty faculty all with offices. I believe three or four clinical departments will use it for their headquarters, and there will be some carrel space for residents, interns and graduate students. A building in conjunction with the medical school is currently under construction; it relocates the Health Sciences Library and adds some classroom space that we would share with medicine.

The funding of Vet Med II was one of the things that was planned for the bond issue that passed in November 1972 for buildings for health sciences in the state. I think that bond issue was for some \$155 million, authorizing the state to appropriate that; but each building program utilizing bond money must be passed by vote of the legislature and signed by the governor. That differed from previous bond issues which authorized the spending of the money on approval of the plan. This set aside \$155 million of money from a bond issue, but the appropriation for each particular portion of it has to be passed by the legislature.

The bond issue passed with the assumption, at the time, that there would be continuing federal appropriations of matching money and these have diminished very greatly. During the time of planning and getting everything in sequence to be ready to go, the inflation has been such that the reduction in what can be built for the \$155 million is considerable. So, the \$155 million health sciences bond issue of which we and medical



schools in the whole university system were a part, is apparently able to fund only a portion of the things that it was originally intended to fund. We're hopeful our program is one of the things that can be funded, but the University and the state have hard choices as to which things can be funded,

*Are there plans at the present time for expanding from the present 94 students to 128?*

Well, that's our current academic plan, to go from 94 which we presently have to 128 here at Davis. That's been a plan that we have had for a few years, but is contingent upon the construction of Vet Med II.

*Getting back to your role in the hospital, what are you teaching there?*

I'm teaching in a cardiology speciality so that I'm responsible for instruction on cardiac problems or cardiovascular problems. My teaching is in cardiology of all species. My administrative time is such that I really don't have as much opportunity as I should to develop the area and much of the primary patient care this year is done by a resident, Gary Wood, who is working with me in cardiology.

It happens that cardiology is more frequently used now. Cardiovascular diseases are more frequent or at least recognized more frequently in small animals rather than large, so that most of the caseload that I deal with now is in dogs, a lesser amount in cats and some in horses, and a small amount in cattle.

*In addition to the resident you mentioned, were you also training an intern?*

Well, the interns are on a rotating internship in small animal or large animal and they rotate through periods of service in medicine and in surgery. We get indirectly involved in helping to train interns by the cases the interns refer for cardiovascular consultation. I don't have any interns to whom I am directly responsible for extended periods of time.

*What tutorial procedures do you use with students in the hospital?*



The hospital teaching by its nature is pretty much tutorial. That is, the professor is associated with small groups of students ordinarily. In case discussions and seminars and so on a number of groups come together--fifteen to twenty students. But most of the teaching is one on one or one professor with two or three students. In that sense tutorial teaching is the pattern of hospital teaching.

### **Administration: Associate Dean for Instruction**

*Dr. Rhode, how many associate deans in the School of Veterinary Medicine at Davis are there?*

Well, at the moment there are four associate deans: one associate dean for student affairs, one associate dean for public programs, one associate dean for research and one associate dean for instruction which is the position that I hold.

*When were you appointed in this position?*

I was appointed in October or November of 1971, and I succeeded Dr. [Calvin W.] Schwabe in this position.

*How long then, has the deanship been organized in this manner?*

Well there were associate deans for a number of years, but the present organization has been, I think, only since 1970. The organization came about as a consequence of administrative changes that were implemented following the self-study which involved the reorganization of some of the programs of the school and of the departmental structure, and of the curriculum also.

*What are your responsibilities as the associate dean of instruction?*

Well, my responsibilities are to coordinate and implement the curriculum for the DVM professional students; to work with the faculty committee, the curriculum committee, on overseeing the curriculum, and to advise the dean on curricular, educational and instructional matters both in regard to the curriculum and resources



for instruction and in regard to the faculty required to put on the instructional programs at all of the levels.

### Pilot Learning Resources Center

*You're also responsible for the Pilot Learning Resources Center [PLRC]?*

Yes, I am. Really, Dr. Johnson in the Office of Education is immediately responsible for that, but that office is responsible to mine, and so yes, I am. The Pilot Learning Resources Center is a remodeled portion of the loft of the old teaching hospital barn where there are a number of small rooms where students can go and study slide sets and film strips and things of that kind, things that may be independent study, or study associated with out-of-class work related to courses, or where they can go and have a space to study films or books, or whatever they wish to do, or to conduct small group discussions if they wish to do that.

*Is there faculty attendance there?*

No, there are not faculty in attendance, except at times when we use that facility for small group discussions and as part of course instruction, but it isn't primarily for that.

*Is it open twenty-four hours a day, seven days a week?*

The students have keys so the rooms are open to them all of the time, for those students who have keys and all the veterinary students can get keys. The slide sets and the projection equipment and some of the things of that kind, we supply from a storeroom which is operated by students whom we employ. It is operated most of the evenings in the week and some on weekends, so that it's open about forty hours per week.

*So this ties in to the educational television program which you are also responsible for?*



The Health Sciences Television is organized as a part of educational television that services the whole campus, and Health Sciences services our school and the medical school.

I'm responsible for overseeing the budget, and making some of the communications that relate to television for instructional purposes in the school. Now at PLRC we have receiving units for those students who want to study our television programs, particularly things that we have put on tape. They may either call in to the studio at Olson Hall and have the tapes played on large monitors in those rooms, or more recently we've purchased some video cassette playback units and have our television tapes on small cassettes available to them in the PLRC.

So, some of the instruction is enrichment instruction using television either in PLRC or in conjunction with regular lecture and laboratories. And, some of it is required; we are beginning to develop programs as required parts of certain courses. Our instructors in surgery have developed programs of the surgical procedures to be done in the teaching surgery and ask the students as part of the regular course to study those TV programs so that they may make the best use of the laboratory that is coming for them.

*What feedback do you get from students regarding this equipment?*

It's mostly been pretty positive. The feedback regarding the viewing of the video cassettes for surgery which the surgeons and surgical anatomists instituted for the first time this past year has been very positive. The faculty themselves have thought that the surgery laboratories went a lot better. The students knew what was expected of them and did procedures with more facility. The students have reacted very favorably to it in comparison to some of the comments that had come in previous years where the students went into a surgery lab not really knowing what the procedure was going to be.

*Would you make a comparison, budget-wise. What is the budget for this today compared to several years ago? For television and the whole PLRC budget, all the things that are involved.*

The PLRC budget itself has been fairly static as far as the operational budget is concerned for the three or four years that it's been in use.



*I guess what I'm getting at is merely a budget comparison of the costs of these facilities compared to when you took over.*

Well, PLRC was just being put in use in 1971. It was being remodeled at that time and so it has actually been a functional unit only during the course of the time that I've been associate dean. Once we got the budget when the remodeling was done and had purchased most of the original equipment, we've only added a modest amount of equipment each year; and then we have developed slide sets at about a steady rate also so that the budget has been pretty steady for the operation of PLRC throughout the few years that it's been in operation.

In the educational television, the veterinary school was one of the first units (schools or colleges) on this campus to use television instruction. I happen to be a member of the instructional media advisory committee; it may have been called the educational television committee at the time Dr. [Charles] Nearing first came to the campus--I suppose ten years ago, I don't recall just when. Some of the original equipment and the use of television was made by instructors in our school.

For a number of years television was budgeted in a core budget to the campus under Dr. Nearing's administration; so as a user, we didn't have to be concerned about the cost directly. More recently we've gone on a recharge budget so that we're paying for services rendered now, and that will be increasing. We've increased the usage through the years. Right now we have a color camera on order and it will be the first time that we'll have available here a color camera to make television productions and video cassettes in color. The camera we have on order has an adaptability to microscopic use too so that color histological preparations or microscopic preparations can be shown by television; I think that in the next year when that becomes operational, our use of television will increase substantially.

### **Teaching Evaluation Programs and Incentives**

*Will you describe your teaching evaluation programs?*

Yes, we have a program in the school in conformity with the programs that are in operation at all units of the University system. We instituted some teaching evaluation on a regular basis before the president of the University said that material of that sort needed to be documented for purposes of recommendations for merit increases and promotions on our faculty. We do collect data from students on a regular basis from the instructors near the conclusion of their teaching of each course, and we collect data that considers



the course as a whole if the course is taught by several instructors. The data is on a simple questionnaire as to the organization of the instructors material and the relevance to the field, and various questions as to the nature and content of the instruction and how well it is received. The students are given an opportunity, also, to write freely comments that they want to make in a short paragraph about the course or about individual instructors. Right now the way or the procedures by which the data is collected--the questions and questionnaires, and so on--are matters for faculty committees to decide. They decide generally the way in which the evaluation process is to be conducted.

*Is this campus faculty committee?*

No, these are the school faculty committees. Our office is responsible for the collection of the data, the processing of those questions by simple computer programs, and the analysis of it; and then the transmittal of the evaluation material to the appropriate people, the department chairman and instructors. Right now we're finding that we have a huge amount of data since we've got teams teaching in many courses, and we're almost getting overwhelmed by a multitude of responses many of which are related to a small block of teaching by several people in each course. So I think we need to look again at how we're doing it and structure something more suitable for the current curriculum.

*Do you ask each department to report on their innovative programs of instruction? If there are any?*

Well, not in that sense, I guess. Each year there are some funds available from campus-wide sources for new or innovative methods of instruction or applications to instruction, and I've been the coordinator for those projects that have come from the school. Our Office of Education is another mechanism by which we try to get new methodology in teaching known to faculty members who may wish to use it if they find it applicable to their situation.

*You mentioned all of these ways in which teaching efficiency has been increased. Are there any other ways that you haven't yet put into effect to increase teaching efficiency?*



I suppose we're always looking for new ways to increase teaching efficiency. I don't know, efficiency may not be the correct word. I guess what we're really looking for are ways to increase the amount of material and the way that students learn and to encourage the students to be the kind of people who will be encouraged to continue to learn. If the students know "X" amount at the time of graduation and don't add to it or aren't already geared in some way to wanting to add to it, they'll be very much behind at the end of two and three years and unable to function satisfactorily very much longer than that.

We're also, of course, interested in efficiency, but some of the things that we've done maybe haven't increased the efficiency so much. But we hope to have been more successful in good instruction of students rather than efficiency in instruction time *per se*.

*In addition to the very important use of teaching effectiveness in terms of merit increases and raises and so on, are there any other ways that you are rewarding good teaching?*

I guess the principal way of rewarding good teaching is by the proper recognition of it. There are teaching awards of various kinds: there are the students giving teaching awards annually to instructors that they choose, and then on general campus there are awards for outstanding teachers for a particular year. Our veterinary faculty have been distinguished in receiving such awards: Dr. Schalm most recently was chosen one of the outstanding teachers on campus. This has been encouraged in several ways by the campus committee.

*When the students select a teacher for an award, is this quite a ceremony?  
Is it well attended?*

Ordinarily it is. Usually there are quite a large number of student awards also--prizes for outstanding student proficiency in various areas of activity, fellowships, and prizes--some of which have been given to regent scholars, or to George Hart fellowships or prizes. And so, at that time, the students usually announced their selection for their teacher awards; this is usually done in a rather informal ceremony in the spring and is well attended by faculty and by all of the classes of students.

*Do the students also recognize at the same time the nonfaculty people?*



They do. They recognize usually a person who is a technician, ordinarily or a laboratory assistant who has contributed in important ways to their education. Very often this has been a person who has contributed in the senior year to their education and in the clinical area, people such as Rachel Smith.

*Is this also used for nonfaculty people in terms of merit increases?*

Well I'm sure that such an award is recognized as an outstanding achievement for these people also, and I'm sure it is cited by the department chairman or the supervisor at the time of the merit increase for them as well.

*Can personnel on grant salaries be used for teaching?*

Ordinarily not. People on grant salaries are supposed to be working principally on grant objectives. Many people have a part of their salary under grant funds and then a part as a teaching appointment; these people can teach to the extent that their teaching appointment allows them to.

For those who are in the radiobiology lab or in the Primate Center (as examples of organized research units in the school who are fully funded in those areas), they can do a small amount of teaching, but not a very significant amount of teaching if they're fully funded on their grant.

*Have faculty salaries been sufficiently high to keep faculty on campus, or have you lost some good people to industry or to private practice?*

Well, I guess faculty salaries are never as high as we would like them to be for purposes of recruiting the people that we want, and so on. In truth, the faculty salary scale that we have now in the veterinary school is competitive with the salary scales of other veterinary schools and at some of the levels is higher than most of the veterinary schools. So, in that sense we're not losing because of salary very many people to other veterinary schools.

Some other veterinary schools have more flexibility about what they will pay one individual than we do with our more systematized way of setting salaries related to the level and step of the professorial series. So, we may suffer competitively for an outstanding individual that another school wants very badly to employ. However, we



have not lost a large number of people to other veterinary schools; we've lost a few during the past few years for that reason, but not a large number.

In clinical areas of veterinary medicine the matter is somewhat different for people who are in the beginning salary scales or beginning academic positions at the assistant professor level. Some of the advantages of going into clinical practice, real ones as far as salary is concerned, are such that we have lost a few young clinicians and we have failed to recruit some people that we wanted who had favored going into clinical practice to starting out at the lower levels of our appointment scale as junior faculty members in clinical areas. But, at the higher levels, even in the clinical medicine, although a good, well-established practitioner may have a superior salary, we don't lose many in the upper levels of our salary scales to people entering practice.

*When did the strict, full-time salary plan go into effect?*

Well, I've forgotten exactly when it went into effect. I suppose about six years ago now.

*Can you describe what that is?*

Well, strict, full-time salary plan was an augmentation to the regular university salary scale for faculty in the School of Veterinary Medicine. The augmentation is a variable percentage through the various ranks of the scale; it approximates 7 to 10 percent augmentation of salary above what it would be if we were on regular university levels. The difference is made up in small part by the state, and a larger part by attributing time that the faculty member spends on grant-supported projects. A portion of that money which comes from the project is put into strict, full-time salary plan. Further, the strict, full-time salary plan is funded in part by consultative work or other extra income ...

*Lecture fees?*

Well, not lecture fees. They may be retained by the individual, but consultative work. If faculty members do consultations then they are not privileged to keep the fee but must put it into the strict, full-time salary plan so that this is distributed accordingly over all of the faculty.



It was a way for us, at the time, to get our salary scale up to a level that was competitive with other salary scales at other universities and to a lesser extent with private practice so that we could recruit and hold our faculty.

*Is this statewide in the university system? I'm talking about the professional school, including med schools.*

Well, there are strict, full-time salary plans for medical schools here on this campus. There are three in the medical school, one for basic sciences which is roughly parallel to that of our whole faculty, there is one for surgeons and pathologists, and another one for the people in medicine in the medical school.

Of course, in medicine none of the client income--that is professional fees, or at least a portion of the client income--in the strict, full-time salary plan comes back directly to the professor in the medical school; it goes into this plan to augment their salaries.

This is in contrast to some other medical schools where they appoint clinical professors who still have the privilege of getting income from the patient directly by professional fees.

*So these are then geared to be at least reasonably competitive with private practice in the main?*

Well, in our case at the veterinary school, they were geared to be competitive with other veterinary schools and with main competition for academic people in industry and in other veterinary schools.

*I have a list of the median salaries that were paid-- not here--this I took from the AVMA Journal, Vol. 137, No. 2, July 1960, and it was the schools-of-veterinary medicine both in the United States and Canada. In the year of 1959 to 1960, just as an example, the median for assistant professors was \$6,300 to \$8,900, associate professors \$7,200 to \$10,500, full-time \$7,900 to \$14,000 and chairman \$10,000 to \$15,900. That was a 33 percent increase over the same median salaries for 1953- 1954. I was wondering, if you were going to list the median salaries today in comparison to those of 1959-1960, would that percentage increase have kept up?*



Yes, I don't know what the median salary is among faculty members of veterinary schools now. I have some ideas, but the increase would have kept up and I suppose would probably a little more than doubled from the figures that you've read.

## Teaching Helpers

*Are teaching assistants used in the school to any extent in laboratories?*

No, not by that title. We don't employ teaching assistants by that title in the same way that teaching assistants are used on the general campus in letters and science as an example. We do have some of our technicians or research associates help teach in laboratories in a fashion similar to that of teaching assistants, and we do have graduate students assist in instruction in some cases. Usually each person in a Ph.D. graduate program is asked to gain some teaching experience usually in a laboratory situation so that they can get some training in teaching. But, we do employ some veterinarians who may be graduate students also as associates in veterinary medicine or some title of that kind who work in laboratory instruction and help in teaching in other ways.

*Why is it that the regular teaching assistant program doesn't lend itself to professional laboratories?*

Well, for one I guess, the assistant teaching pay has been so low; if we're to use that title, we couldn't attract graduate students with DVM degrees to come, and the kind of teaching expertise we need in our courses is primarily from trained people who have already had the DVM degree who then are going on into advanced work. So, the teaching assistant as it is recognized elsewhere on campus really, we don't find them available.

## Graduate Programs

*What's the rule of the school in terms of graduate programs?*

The school has quite an active part in graduate programs. I know our school has more graduate students than any of the other veterinary schools in this country, so that we are one of the principal trainers of graduate students. We have about one hundred students



in masters or Ph.D. programs, in academic graduate programs, now. The majority of them are probably in the clinical pathology graduate program, and the majority of those people are post-DVM students who are training towards a masters or Ph.D. degree in the general field of comparative pathology.

Some graduate students here in physiology and microbiology, or comparative pharmacology or nutrition, or biochemistry have their major professors faculty in our school and are therefore our graduate students. We have a graduate program called the Master of Preventive Veterinary Medicine which is a professional graduate degree in preventive veterinary medicine and epidemiology. This is almost totally taught by faculty of the Department of Epidemiology.

Then we have graduate training in clinical areas, post-doctoral clinical training, and our internship and residency programs in the teaching hospital. There are about forty students who are enrolled in that program at the present time. So, we have quite an active program of graduate instruction of several kinds.

*Is the masters program in preventive veterinary medicine innovative here at Davis?*

Yes, I'm told there is no really similar program in any of the veterinary schools elsewhere.

*Who developed it here?*

Cal [Calvin W.] Schwabe was, I guess, the principal one who developed it. Walt Sadler and others in the Department of Epidemiology were instrumental in doing so also. It has some features that are analogous to masters of public health. There is a program at the University of Minnesota that has some similar features, but this one is a little different than all of the others and is the only one that is so-named. It draws students worldwide at any given time. It has more than twenty students now. It started out with about ten or fourteen, and about half of them in each class annually have come from foreign countries.

*Does this account for many of the foreign graduate students that you have?*



Well, I don't really know the number of foreign graduate students. Of our total of a hundred and some odd, it accounts for a significant number, but there are also a number in academic graduate programs in comparative pathology and elsewhere, too.

*Do you ever have a problem with a foreign graduate student who may have inadequate preparation or background for the regular graduate program?*

Yes, sure. The students that come are trained, some of them, quite differently than the students who have graduated from schools in this country. And, of course, they have to know or learn English including the vocabulary in this field of science and medicine. Sometimes the time required to complete the program is longer to do make-up courses, to be placed with course loads and at levels that seem appropriate for them. We try not to have two programs--one for foreign students and one for domestic students--at two different levels, and I think we've succeeded reasonably well.

*What is your opinion regarding the desirability of post-professional versus post-bachelor graduate students?*

By post-bachelor graduate students I think you mean training at the masters and Ph.D. level in the school, and by post-professional you mean the training of graduate students to the masters or probably more often the Ph.D. degree--those students who already have a DVM. Well, we feel our role--if we have limited graduate resources for instruction and places--is more to train post-DVM students in special fields to enter academic veterinary medicine or research or industry, than it is to train bachelor students for Ph.D. degrees.

This training is more appropriate to graduate programs in the Colleges of Letters and Science or Agriculture and Environmental Sciences. So, we do have both, but we're inclined to favor the post-DVM graduate training as being the particular role and the need for us to pursue.

*Perhaps this feeling would also be a factor in the admissions program too, would it not?*



Well, admission of students into graduate work I suppose ...

*Or into DVM?*

We don't have a combined DVM-Ph.D. program, so that really the expressed interest of a person on entering the DVM program on finally pursuing a research degree or a Ph.D. degree which is a long way off, I think, doesn't enter too much into the admissions process.

### Participation of the School in General Campus Offerings

*What's the role of the School of Veterinary Medicine in general campus offerings in the basic and allied medical and para-medical sciences?*

We offer quite a number of courses that are taken by students on the general campus. Of course, a number of them are at the graduate level where our faculty are involved as members and with various graduate groups on the campus. So, we have graduate courses which graduate students from several of the schools or colleges on the campus take. We do offer a number of courses at the upper division undergraduate level, courses that we call the hundred series courses here on campus. We're not given a responsibility for providing very much in the way of undergraduate instruction. Yet, through the years, courses in medical microbiology and fundamentals in immunology and animal virology, in physiological chemistry, in systemic anatomy, in comparative hematology, as examples, have been the only courses in those subjects available to the students in biological sciences, and particularly recently, to those students who aspire to be medical technicians and so on. These students need them as part of their training. So, the general campus has recognized that we have the faculty here that shouldn't be duplicated in their departments to give those courses, and is now recognizing and helping sponsor some of them.

*Has there been a problem with the campus duplicating courses that are taught here? For example, in 1962 the School and the Department of Physiological Sciences--the campus had a Department of Physiology--was there a conflict there?*



In the case of departments of physiology there are several on the campus now: human physiology in the School of Medicine; physiological sciences in the veterinary school which has physiologists and bio-chemists or physiological chemists, nutritionists, and pharmacologists as members of its faculty, and a Department of Animal Physiology and a College of Agriculture and Environmental Sciences. Each of them have a series of courses which they give. There isn't very much duplication in them; that is, we don't now give a disciplinary course in systemic physiology since we're teaching our courses around organ systems with an interdisciplinary approach. But, if we did, our courses would be intended for the needs of the professional student in veterinary medicine whereas an animal physiology department course would be a general course in systemic physiology. So, there are relatively few direct overlaps in courses and all of the courses that are given on the campus are reviewed by the campus courses committee. It's their responsibility to see that there aren't major duplications of courses given by the several schools or colleges. They take that job pretty seriously. So, if we should propose a course which they feel is duplicated and already exists on the campus, we would be required to justify how ours is different and needed and see that it isn't duplicated elsewhere.

*Are there any courses that are given on campus in other schools or departments in which your students participate?*

Sure, there are a number that our graduate students take.

*You did say animal science?*

Yes, our graduate students take quite a few courses that are given elsewhere on the campus. Our DVM students may take a couple of courses in food sciences and technology; our veterinary students take relatively few--none in recent years. We're now having the students in the food animal medicine or practice track take a course in agricultural economics and anticipate taking some courses in animal science and animal nutrition and animal production as a part of that track program. Our graduate clinical students may take an occasional course on the campus and in particular some of the courses or informal teaching that are given to house officers in the School of Medicine.

*Do any of the students in the School of Medicine take courses over here?*



Not in the professional curriculum. The professional students in medicine towards the M.D. degree--we don't teach to any extent at all. Graduate students that are sponsored by the School of Medicine may take courses that we offer.

### Visitors and Observers from Far and Near

*I understand that very often during the year you're visited by teams from other schools of veterinary medicine. In what specific ways has this school had an impact on other schools of veterinary medicine?*

Well, I don't know all the ways that this has happened. It's true that we have had a number of visitors and I guess we've always had a number of visitors from over-seas and from elsewhere--California is a popular place to visit and so on. Recently, yesterday, we had visitors from the University of Pennsylvania; a couple of weeks ago we had visitors from the University of Illinois; and shortly before that we had a group from the University of Minnesota. These teams of visitors were looking at a number of things: one, how our programs are budgeted to get comparative data on that score so that they can use it in their planning process. A number of groups that have visited, either by formal visits or dropping in with certain members of their faculty visiting, to find out how our curriculum is planned and so on. In recent years we have become recognized as one of the schools with better developed and supported programs in a lot of the areas of veterinary medicine and people want to see what it is we are doing and how we are doing it so that they can make use of the good parts and avoid some of the bad parts.

*Do you get any feedback as to how their observations have been implemented in terms of their own curriculum?*

I think I may have mentioned that at the time we undertook a curriculum revision there were other schools in the country reviewing their curricula and changing them too; so it's hard to describe what impact ours has had and what impact others have had. But, I think we've all tried to share ideas among academic people in the profession and our changes have been recognized and I suppose put to use where they're thought to be applicable at other places too.



## Questions and Answers on Various Subjects

*Will the increasing breadth of the subject matter and the technical knowledge increase the training period for the professional student?*

No, we hope not. We have no plans to go beyond four years of professional curriculum.

*Are you using summers?*

We don't have any real plans right now that are very fixed on how we would use summers, but when we have talked about it we said that if we do require students to be here in the summer for part of the clinical program, those students would be free from school activity for an equivalent amount of time in the fall or winter or spring, so that we would spread our hospital patient teaching resources around the whole year to be able to teach a few more students rather than to leave it relatively untapped during the summer.

*I understand that several schools have year-round operations--Michigan State, I think, and Texas A & M.*

Yes, some schools have year-round operations, and Michigan State has had them and I think they're continuing with them, (I'm not exactly sure just what the situation is going to be at Michigan). Texas A & M is on a trimester program; they graduate students at the end of nine semesters, and since there are three semesters per year they have a year-round operation for their students and graduate them in a shorter calendar time than any of the other schools.

A number of other schools require a part of the summer for clinical training, or all of the summer for clinical training (usually a part of the class for half the summer and the other half of the class the other half of the summer). Some of them say that's in addition to the other semesters or quarters in the four years, and some of them say that that frees time to have the students away at equivalent amounts of time--it operates both ways.



*Do you think there is need for more electives than they receive? Cultural electives, for example, or specialty electives?*

We're given quite a number of electives now, although the electives are of a programmatic kind--once they've elected a program, there are requirements in that. I suppose you could say that we in veterinary medicine have been too insistent that the students are exposed and taught everything and not given quite enough opportunity for freedom of choice; so there may be a few more electives that will be introduced.

But, I would doubt that we, as a school, are going to decide to introduce a large number of new electives. The body of knowledge that many of the faculty feel is needed is expanding every year, and so the tendency is to make every student take it, not to free the thing up. I don't know where this is going to end, but I can see these pressures.

*What about internship as at Auburn?*

Internship as at Auburn, I guess, is a form of a preceptorship. My understanding of what they do at Auburn is that they require a student spend a substantial part of the time of the clinical year, associated with a person in practice. Now this has met with some success; I'm not positive, but I believe that Auburn allows a student to select the practice that the student goes to.

We're using preceptorships, a similar thing to an internship, in a limited way now, usually for only a week or two weeks. We're going to expand it, I think, to a maximum of six weeks in certain parts of the track program where we use certain kinds of practices or experiences available, at zoos in the case of zoological medicine, for better clinical training with more material that is pertinent to the particular program of a student than we can provide here; and we're going to make that opportunity available to the student as part of the track program.

Regarding the question of how the student may choose a preceptorship--the veterinarians that we intend to utilize will be appointed in some regular, usually nonsalary, title, but would be reviewed and appointed as affiliates of our faculty. Then we'll send other students to these affiliates who have been selected rather than using the student's elected practitioners.



*I remember reading the AVMA Journal issues of 1940 and there was a cry on the part of the practitioners for internship requirements. That, apparently, has been satisfied by what you're now doing in the fourth year with clinical practice?*

Well I guess so, in part. There's no period of internship required in California before a person becomes fully licensed. There have been in some states, such requirements. The people who are concerned about licensure to practice veterinary medicine are really not as concerned now about internships immediately after graduation; but they are concerned about limited licensure as one of the things that has to be coped with. That is, a person may be licensed to practice only in the field of small animal medicine and surgery and not licensed to practice in bovine practice, or the reverse--something of that kind. This hasn't come yet, anywhere. And then the other part may be some continuing education activity or some testing mechanism whereby people who are licensed are not licensed indefinitely, but have to earn so many credits of continuing education programs in order to maintain the license, or would be periodically examined in order to maintain the license. None of those things have come about yet, but probably the first to come about will be the necessity of maintaining some continuing education credits gathered in one way or another by people in practice in order to maintain their license.

*If the profession did this, it would be a step ahead of the medical profession, would it not?*

The medical profession, I think, does it through the County Medical Association--probably not organized quite that way--but it really does do it for most of the people in medicine and it may be a requirement to maintain affiliation with a hospital. So, continuing education is an important feature of medical training also.

*What about residency programs of advanced training not leading to a degree?*

We're trying to develop those. We have a rotating internship program in the teaching hospital, and now we have residency programs that are being developed in several areas. A student, after completing an internship, would enter a residency program, usually in a clinical discipline or in broader areas such as small animal surgery or large animal surgery, where the student would have clinical practice responsibilities in the teaching hospital for the majority of the time; they would actually do some clinical instruction



to senior students and to junior students, and then would have opportunity to take course work and to develop a clinical research program in that particular area.

We think that as these programs do develop as we're planning them and starting them, they will provide a better training for the people who want to go into academic positions in clinical medicine in veterinary schools and will provide the kind of training that the people will need to go into specialty practices in veterinary medicine.

*What about the budget for the programs?*

A few of the students have come self-supported. We budget a number of them through the teaching hospital as part of the House Officer Program of the teaching hospital budget--as a part of its regular budget. These positions, then, involve clinical work to maintain the program of the teaching hospital--some teaching, and then some opportunity for training apart from the actual work required.

*What percentage of DVM students that are being graduated today fill national needs?*

Well, this is a debatable question. Certainly, as we know it now and as we have known it for the past few years, there are many more positions where DVMs could be placed than there are DVMs to fill them. That is, if you look in the want ads of all of the major journals there are many opportunities for practice; and at the time of graduation there are many people who are in practice who want to employ recent graduates. So there are more opportunities than there are graduates to fill them.

Now, just how many people could be employed in the profession is a matter that is under debate. I've heard people say that more paraprofessionals or veterinary technicians could fill some of the needs that veterinarians are now doing. Others say that there are many fields that veterinarians could enter and expand into and you know that it's been an expanding profession so that there are probably lots of new opportunities that veterinarians could make for themselves that they could not take up if there aren't enough of them. But, just what the manpower needs are--we think they're more than we're currently graduating--the actual number is really difficult to say.



*Do you think that with the expanding needs of public service and research, the number of graduates who actually engage in practice will be smaller? In other words, will more graduates go into those other areas rather than private practice?*

Well, that may be true. It really depends, in large, on the economics of the thing. If the economics of private practice, particularly a small animal practice, remain the most attractive, then more of the graduates will go there. If they become less attractive, and there's some indication right now that there is some influence of our recession on the economics of small animal practice, then they will seek opportunities elsewhere.

*Again, just as an approximation, do you know what percentage of California needs is being satisfied by the graduates from here?*

Not really. We do know that graduates of other schools in this country, I guess the figures are about two times as many as graduate from California schools, come and take our State Boards each year, and become licensed in California. Most of our graduates, about 80 percent of them I guess, stay in California. Some of them go elsewhere for a year or two of internship and then come back. The out-migration of our graduates is not very great over the long run; the in-migration of the graduates from other schools is greater than the annual graduation from here.

*What are your responsibilities in connection with the satellite or the expanded vet med program? What are your thoughts on that?*

My responsibilities in connection with the expanded vet med program have been as a task force member under Dr. [William E.] Powell's chairmanship in 1973 on the committee which developed and described the system proposed with an expanded program at Davis, particularly in student numbers, for the core curriculum coupled with clinical centers for food animal instruction in the San Joaquin Valley and another [in] Southern California for urban and equine practice. Subsequently, I have been a member of Dr. [Emil M.] Mrak's committee to develop more detailed planning for this system and I am one of those within the school who has been developing the academic plan and studying the feasibility of such a system.



I believe that it is a good plan if it is implemented with adequate funding and faculty in the two satellite centers. The livestock center is an intensive livestock production area and is particularly important for us now, quite apart from expansion of student numbers. The Southern California urban and possibly equine clinical center is much desired by veterinarians in Southern California as a referral center. And, if we are to significantly expand veterinary student numbers in the University of California, I believe the system with clinical centers is a better approach than marked expansion completely at Davis or the alternative, a second school.



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## Ronald Bolstad

### Interviewer's Notes:

These interviews were conducted by A.I. Dickman in 1975.

### Curriculum Vitae:

Assistant Dean of Administration, School of Veterinary  
Medicine, UCD 1974 -

Special Assistant to the Dean, School of Veterinary Medicine,  
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## Ronald Bolstad

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*Mr. Bolstad, will you start by identifying yourself and your office, the history of the office, and your own background.*

Thank you very much. I am Ronald Bolstad, I'm pleased to be a part of the School of Veterinary Medicine. I joined the Davis campus in 1965 in the Chancellor's Office as assistant to the vice chancellor of academic affairs. During that four-year period of time I had occasion to relate in a number of ways to personnel in the School of Veterinary Medicine particularly in the dean's office. But I think during that period there was something that made a lasting impression on me, and to some extent probably influenced my arriving, eventually, in the School of Veterinary Medicine, and that was that I would occasionally eat lunch in the Silo where I'd be exposed to the veterinary medical students. I was particularly impressed with the rapport that these students had with one another, the extent to which they were concerned about the lives of one another a genuine concern, a genuine helpfulness, and this made an impression on me of a student world, which at the time was (and probably still is) very competitive. I would think that later when I was offered by Acting Dean James R. Douglas [Vet Med School] the opportunity to join the staff of the Dean's Office, this influenced my saying yes. This offer came about in January of 1969, and I joined the school in April of 1969.

I have found that that was not a mistake for I've enjoyed very much my association here. Everything that I thought would occur has occurred; the association with Dean William R. Pritchard has been an enjoyable one--certainly a challenging one. My background is one that led to this type of position as Assistant Dean of Administration. I started out with graduate work in business administration at UC Berkeley with an emphasis on university administration.



*Did you do your undergraduate work there too?*

I did my undergraduate work at Stanford.

*Where was your home?*

In Southern California (San Marino).

*And you were born there?*

Los Angeles.

*On what day?*

April 13, 1939.

*What does your father do?*

My father, Roy Bolstad, is deceased. He was in banking and real estate in Southern California.

*Are you the only one that has followed an academic pursuit?*

Yes I am, and I suppose the rest of my family doesn't know what to believe of me so cloistered here in academia, but they certainly can see that I'm happy.

*And you're married?*

Yes, and two children.



*What's your wife's name?*

My wife's name is Marilyn.

*And the two children?*

Brett, age four and Eric is age two.

*And you live in Davis?*

We live in Davis, and have lived in Davis for ten years.

I was first employed in the school with the title of Special Assistant to the Dean and I continued in this title through June of 1974. In July of 1974, I was appointed Assistant Dean of Administration. It had been Dean Pritchard's desire since joining the school to have such a position recognized and approved for his office, and he was very pleased, as I was, that this came to fruition about eight or nine months ago.

*Was there a marked change in your duties?*

Yes, in addition to those that I had been involved with (the subject areas, the functional areas), he has increasingly utilized me in a planning capacity and in assisting him in guiding the administrative program of the school. I am much more involved in many of the key matters which the school is now facing.

*What are the full responsibilities of your office?*

The responsibilities cover a number of areas; first of all budget, I'm responsible for coordinating the budget preparation for the school, and maintaining budgetary control in the school. Also, I'm responsible for the staff personnel program, staff personnel administration, which would include the implications of staffing as it relates to budget (it includes responsibility for the staff merit salary program).



*Yes, and recruiting?*

Recruiting is delegated to the departments so I usually do not get involved in recruiting other than in a policy or a procedural sense.

Then there is another area of responsibility that sometimes is hard to pin down. This involves the implementation of University or campus policy within the school, which requires an evaluation of these broad policies in terms of their impact within the school. It also involves tailoring them to fit our circumstances here in the school. In this capacity I advise the dean on the effects of the policies, and draft the materials that will subsequently be distributed within the school.

*Can you give either an actual or a theoretical example?*

This would involve policies such as hiring consultants. This has been one activity that's been delegated to the dean in the last couple of years. We had to develop an internal procedure whereby the appropriate information would be available to the dean to make the decision. So he would look to me in this area to develop an internal operating procedure for handling the hiring of consultants on extramural or state funds.

I'm often reviewing policies which run the gambit from academic personnel policies to budget policy to staff personnel policy, and so forth.

*Since it's a new series of duties, it's quite innovative. I would imagine it's very challenging.*

It's extremely challenging. The pace is exceptional. It's highly interesting work. One cannot program each day for the variety is tremendous.

*Can you do it all in five days a week?*

[Laughter] No, definitely not! Well, fortunately I have a good staff here working with me. My colleagues are very helpful and productive and fun to be with, so that's a pleasant experience; and we do share the workload. The workload that I'm alluding to here is a heavy one throughout the office, so I'm not alone in this area.



*In addition to your secretaries and assistants, what other offices are subordinate and report to you?*

The Business Office reports to me; this is headed by Bob Eernisse. Bob has been with the school approximately ten years and supervises a group of four people who are involved in maintaining the accounting ledgers, reconciling them and putting through budget adjustments. Also coordinated in this office is the handling of the purchasing function for the teaching departments primarily.

*Does he have central supply?*

He also has central supply reporting to him, and he gets involved (as I do, in the drafting of budgets and rate schedules for the various support units in the school including Central Services, the Media Room, Animal Resources Service, and the Primate Service Facility. So we look to Bob as our business officer. I look to him specifically in the accounting and materiel management purchasing areas.

Since we're talking about the financial world, and the scope of the school and these service enterprises, I wonder if it would be an appropriate time to talk about staffing--how large we are, what type of organization we are dealing with here. I think that when I mentioned the variety of the job, much of this variety comes from the fact that we have a diversity of funding sources in the school.

We have a diversity of program units and all of these--this diversity--requires a different way of handling finances, of working with the program directors in terms of their fulfilling the objectives of their particular programs. The school has a budget of approximately \$14.8 million this year (1974-75) and this is the budget for direct costs. It doesn't include the indirect costs such as general administration, accounting, purchasing services from the general campus, from Mrak Hall.

Of the \$14.8 million, 37 percent of that total is made up of state of California appropriations, 42 percent is federal funding from several different agencies (primarily from NIH) and 21 percent is comprised of a variety of other funds including client income in the teaching hospital, gifts and endowments, income from services rendered to outside organizations, and internal recharges (recharge income, for example, generated by the Primate Service Facility and Animal Resources Service).



*As a minor point, or a minor question there: does the school derive any income from the sale of animals?*

Yes, it does, a very small amount really. We buy, of course, animals for teaching and research purposes, and when they are no longer needed for these purposes they are sold. We do sell them through established channels (auction yards and so forth) and we try to plow back those proceeds to purchase additional animals since this is a recurring need in the school. But it's not a large endeavor, it involves primarily livestock or individual animals which may be needed in courses involving livestock reproduction for example.

*Can you relate the budget of today to ten years ago? Or five years ago?*

Well it's certainly grown. I think it amazes all of us that we're dealing with \$14.8 million. I think another factor that's surprising to us is that, while we're a state of California institution, we're actually deriving more of our total budget from the federal government than we are from the state. The totals are very similar, but still we at the moment have more federal funding than we do state.

*Can you breakdown the distribution, the disbursements as well as the sources of income?*

Are you thinking there in terms of programs, or salary?

*In terms of salaries, faculty, nonfaculty, etc.*

The budgets for example, for the "instruction and research" activities, the ten teaching/research departments, as well as the Dean's Office roughly \$4 million of state money. A little better than half is academic salaries, and the rest then is support money (supportive of staff personnel, laboratory help, office help, and so forth).



*And that's all state money, no federal?*

That's state money, We do have federal in addition to that. It is supporting our teaching program. Also, we have the budget of the veterinary medical teaching hospital which is approaching \$2 million this year. The veterinary teaching hospital is the clinical laboratory for the school's teaching programs--the D.V.M. instruction as well as instruction of what we call house officers, the interns and residents (a very important part of our program).

*Again, another minor question in connection with that: what percentage of the VMTH billings are unpaid?*

By that do you mean that eventually go to "bad debts?"

*Right.*

Unfortunately they are higher than we would like them to be at the moment. They're running about 7 percent.

*How does that compare with previous years?*

It's higher and there are a number of reasons for this. I think one thing we're finding is the costs of providing services have grown immensely with the inflationary spiral. With the range adjustments to University salaries the cost of personnel in the hospital has risen enormously in recent years. And, for the most part, the hospital has had to absorb this and endeavor to pass the cost on to the clients. Well, the hospital is constrained in doing this by a number of factors, including willingness to pay on the part of the animal owner and lack of third-party insurance for animal care. Another thing we've been dealing with is uncertainty in our economy and I think people on limited incomes or people who's jobs may be in some jeopardy are going to think twice before they incur a sizable veterinary bill. And, if they do request services and their bill appears exorbitant to them, well then, there's no telling what priority they may place on the payment of that bill as compared to paying for a doctor's bill for a member of the family (a son or a daughter or a wife).



*In terms of members of the animal industry who are clients--is there any tendency for them to feel that perhaps this is just more public service?*

There certainly is this feeling. Customers come into the teaching hospital understanding that it is part of the University of California, that it is a public institution, and a training facility and in many instances they expect two things: perhaps a lower cost because it is a public institution and there's teaching involved and secondly, if their animal's health problem is unique, that they will receive specialized services that perhaps are not available elsewhere. In the first instance they would expect perhaps a lower bill, and in the second, they might expect a higher bill. But I would suspect that the first factor would be the predominating influence on their thinking. And I'm afraid that many of our clients are surprised when they finally understand what the costs of veterinary care really come too. It's not cheap, there's expensive equipment involved, a broad range of supplies (many of which are used both in human medicine as well as veterinary medicine).

*How does the client pay for the ambulatory service? Is he required to pay cash, or credit, or can he use a credit card?*

Bankamericard can be used in the hospital. This is the only credit card at the moment which can be used. In additions we are increasingly striving to collect cash at the time animals are discharged from the hospital. Credit, on the other hand, can be extended to the client if necessary. In the ambulatory service which is directed to livestock, to herd health, we're dealing, in many cases, with valued, long-time clients. We know their credit's good and we know it would be difficult for them to pay cash because of the circumstances of our providing the service in the field. So, while there is some effort in our large animal ambulatory services to collect cash, for the most part the realities of the situation are such that we primarily resort to billings in that area.

*Okay, I interrupted you a bit, you were analyzing the expenditures of your income, and you had covered \$4 million of state funds for teaching and research.*

I should clarify that, too. When we say teaching and research, the research there is the research which often is referred to as the little "r". It is the research which is intimately involved in the teaching process. It's the research that will be conducted within a departmental setting by the faculty member; it's his own individual activity, creative activity, within the department, and supported to some extent with department funds.



As time has elapsed there has been less and less money left for the so-called "r" in the I and R, (instruction and research) in the budget. The costs of instruction have increased markedly and leave really minimal discretionary money for faculty research compared to the past.

*So you are distinguishing the difference between the small "r" which would be departmental research that's done together with teaching primarily, and the big "R"-- which would be the research done by the individual faculty members through their own securing of grants and that sort of thing.*

That's correct, or through an organized research unit such as the California Primate Research Center, Radiobiology Laboratory, or the Agricultural Experiment Station.

The instruction and research budget is primarily state funded. At the moment we have federal money there. We have four training grants, and we also have federal capitation grant money which has come to us under federal health manpower legislation.

*Capitation?*

Capitation!

*And what does it mean?*

I gather that the word capitation is synonymous with *capita* or *per capita*. It's a formula grant program wherein we get so many dollars per D.V.M. student

*I know what decapitation [laughter] is.*

[Laugh] This is a very positive thing. The goal is that the health science schools around the country will increase their enrollments. In order to receive these federal funds, a school is committed to increase its enrollment. To qualify we increased our enrollment from 85 to 94 students per class three years ago.



*Is there a further commitment to 128?*

A commitment to 128 is contingent on availability of adequate facilities. We're constrained at the moment by our facilities to increase beyond the present 94 students per class. So, we do have, at the moment, a mix of public funding, the state of California, and federal capitation supporting our instruction and departmental research. In the veterinary teaching hospital (which I wish to mention in conjunction with the instruction and research funding because it is such an integral part of our teaching program) we have a mix of funding. Client income is the primary source of support for the program, together with a major contribution from the state of California under the label, "clinical teaching support." And so it must be a subsidized activity, because we can't pass on to clients the full cost of patient care as there is instruction directly involved with that care.

*What percentage of the teaching hospital budget is supported from its own income?*

It's in excess of 50 percent. We have been running about 55 or 57 percent. We had hoped to get as much as 60 percent funded by client fees. This is very difficult. We have approached this but I am afraid that we've slipped back. The costs of operating the hospital (the teaching program with its patient care activities) are such that it would be very difficult to increasingly pass on the costs and a greater share of the budget to the clients and still remain reasonably competitive with practicing veterinarians in the area. And, of course, that is important because we rely on a mix of cases, both routine and specialized, to insure instruction in a wide number of procedures and diagnostic areas for the students.

*The two are quite different, but I'm wondering if there is any comparison in terms of self-sufficiency (income-wise) between the teaching hospital of the veterinary med school, and the human hospital, the Sacramento Medical Center.*

I am not familiar with the proportions of the funding for the human hospitals, and specifically the Sacramento Medical Center. Those University hospitals also receive clinical teaching support, as we have been receiving, but there you do have third-party insurance which is a recognized source of support. I'm not familiar with the economics of that.



*A very important point. I'm also curious about whether or not the clinicians are required to carry malpractice insurance here, and if so, how do their premiums compare to human medicine premiums?*

The malpractice insurance for our clinicians is provided by the University. There's no individual responsibility for the malpractice premium.

*Are there many law suits?*

That I am aware of--a negligible number, occasionally.

*It's probably hard to find a talking horse that makes a good witness [laughter].*

Since we've talked about funding here on the instruction side, I might mention the research side for a moment (the organized research side).

The school has had, for many years, I would presume from its founding, an Agricultural Experiment Station component which we now designate the Livestock Disease Research Laboratory. The funding for projects within the laboratory is provided to the departments for management on behalf of the faculty members involved in experiment station work. The school reports to the director of the Agricultural Experiment Station at Berkeley through the associate director of the Davis campus.

The budget in the school for the Livestock Disease Research Laboratory is comprised of primarily state-appropriated funds, as well as monies from the U.S. Department of Agriculture. Occasionally there are gift funds, small grants, and so forth that supplement these other sources, but certainly the major source is state of California appropriations and then also federal Hatch money, regional research money, and USDA cooperative agreements. The state of California funds amount to somewhat in excess of 50 or 55 percent, and the federal and other funds somewhat less than 50 percent.



*But in the overall, 42 percent of all funding is federal, and 37 percent is state?*

That's true.

*Which makes me wonder if the old question as to whether the School of Veterinary Medicine is oriented toward agriculture or toward health isn't answered by the budget. Is it more oriented toward health? It's funded by the federal funds, particularly the National Institute of Health?*

That's true, we are continually endeavoring to evaluate our contribution to the livestock industry, to food production and so forth, but I think, and of course, you just pointed out, that health is where the action is right now. That's where the money is coming from, and NIH recognizes that veterinary medicine has a definite role among the health sciences in terms of human disease problems.

*Do you find that industry grants are increasing?*

Yes they are. Industry grants and donations from private associations, as well as from individuals, is up and we're very grateful for this. We'd like to see more because we do have programs that could benefit substantially from this. I'll name two: the Equine Disease Research Laboratory, which is a somewhat loose coordination of faculty involved with equine diseases, and also a Companion Animal Laboratory in which various faculty are studying health matters concerning companion animals. These areas are basically not funded from the federal government agencies, so if they are to really blossom we must obtain private monies.

I think that in talking about organized research certainly the ag experiment station component of the school has been a major focus in past years, and continues to be. We also have within the school, administered by the dean of the school, the Primate Center, which is predominantly NIH funded through a base grant. The faculty associated with the center are encouraged to obtain their own project funding through various agencies to supplement the base grant, so that the base grant becomes an operating grant for the center itself, helping people to get a research program going, with the faculty the researchers themselves) generating the hard research dollars for the particular programs. The center program is Core funded \$1-1/2, million a year now roughly, and through other associated grant funded activities probably another \$1-1/2million. We're talking about perhaps \$3 million in nonhuman primate-oriented research, behavior problems, disease problems, and so forth.



The third organized research unit in the school, the Radiobiology Laboratory, is also funded in excess of a million dollars. Contract funding has been provided by the Atomic Energy Commission and now with the recent reorganization, it's ERDA (Energy Research and Development Administration).

We see the Radiobiology Laboratory as being a focal point of expanded research on the campus through that agency. The new agency is actually concerned with both nuclear and non-nuclear research whereas the old AEC, as I understood it, was essentially nuclear oriented. So it's a broadening of that whole program and it has implications to what we might do here at Davis.

I think the key element here is that these organized research activities provide a base for our faculty to engage in research--interdisciplinary research--and it also provides an excellent opportunity for students, undergraduate, graduate and professional students, in the school and on the campus to receive very meaningful training. The Primate Center and the Radiobiology Laboratory, with their animal colonies--the nonhuman primates at the Primate Center and the beagle dogs at radiobiology--provide clinical exposure to students because each of these units carries out its own surgery activities and pathological laboratory analysis. It's an opportunity for our students to get exposure with regard to a particular species and to large colony management. So, although they're labeled organized research, we certainly see them (and the University sees them) in a much broader perspective. And certainly their existence is justified on the basis of their providing both teaching and research opportunities.

*Regarding the teaching animals: what effect did the lab animal welfare act have on the practices of the school?*

The animal welfare laws have, as you're aware, become more stringent as time has progressed, and probably will continue to become more stringent if past trends are any indication. One effect from my vantage point in overseeing budgets is that equipment becomes obsolete fast, outdated because of changes in the laws. It requires that we update as soon as we have the resources to do so. It means that we have to have animal caretaking staffs which are more cognizant of animal welfare. They have to be trained to watch for certain things. It certainly passes on to us an obligation to uphold the highest standards possible for the animals. We have a moral obligation, we have a legal obligation. We also have an obligation as a veterinary school to expose our students to the "right way" of doing things.



*Isn't this field becoming a discipline in itself, now?*

Yes it is.

*Is there a track program for it?*

There is a track program, and as I understand it, it's part of a track which also relates to exotic animals. But, the student can select a specific track in the lab animal area. We do have units in the school and animal colonies where the students can receive very good training. We're talking about a thousand nonhuman primates, We're talking about a thousand beagle dogs. We're talking about many species cared for by the Animal Resources Service, varying from cattle, horses, goats, down to gerbils, mice, rats and so forth. So the exposure range here is considerable in terms of numbers and species of animals, different environmental settings and so forth.

We've talked funding here, I think it might be well to intersperse that the school--all the programs--are manned by a considerable number of personnel. When we add them all up we find that within the campus we are a major employer. On a head count basis we're talking of some 700 in the School of Veterinary Medicine.

*This is support personnel not including faculty?*

This includes faculty. This would be both the academic staff and the non-academic support staff, and it would include student help because we involve our students in assisting in the teaching labs, in research labs and so forth. Now this total breaks down into, again on a head count basis, 538 staff (non-academic staff) and about 170 or 180 academic. Of the 538 staff, 400 of those are career employees while the remainder would be students, part-time people. To define a little more closely who is included in the "academic" category, when we mention "academic" we're talking about persons who are engaged solely in research, about people that are engaged solely in lecturing and teaching, and about those who are involved in both teaching and research. Now if we narrow that down further and speak of the members of the professorial staff (the faculty), we're talking about roughly 100 people.

*Can you project any of this for the year 1985?*



Projections can be made in several directions.

The faculty of the school will continue to grow at least somewhat because we're only this year admitting the third of our four classes at ninety-four students, so next year we'll have another nine more D.V.M. students. Under the present enrollment projections through 1983-84, the total faculty will grow to 138, so that's about a 38 percent increase. That's based on an assumed increase in D.V.M. class size to 138 students, and as I mentioned earlier, that growth is contingent on our having facilities available to accommodate them.

The non-academic staff represents a very diverse number of job classifications from business managers to typists, to animal caretakers, to animal colony supervisors, radiological technicians--a very broad base of job responsibilities and each having its place in the total program.

I think that the one thing which we've continually tried to do in this school is to recognize a class of employees which tends to be at the lower end of the pay scale but certainly has a very major stake in the success of our programs--the animal care personnel. For example, one thing I've tried to do from my office is to improve the merit program to specifically consider this group of employees in terms of their work and their responsibilities. Certainly many of them operate with some degree of independence. They may be away from the central headquarters of their unit and they have to exercise independent judgment. They have to be depended upon, so in many respects they are the unsung heroes of a successful research program or a successful teaching endeavor.

*Is there a difficulty with good people like that if they are being paid out of what we ordinarily call soft money and if that particular grant dries up, how do you handle that kind of a situation?*

We, in fact, have an insurance program against wide fluctuations in staffing with respect to this group of people (the animal care people). We have centralized animal care units which provide services to the individual faculty investigators so that if one investigator's research money dries up, there's another on the horizon with money coming in and the caretaker can be reassigned.

I'm speaking here of two units in this school, the Primate Service Facility, and the Animal Resources Service. Each of those units has a core staff of animal technicians, caretakers, and each unit is, over a period of time, able to maintain a reasonably stable work force by serving a broad number of investigators. Use of these units is voluntary. The faculty member can hire his own animal caretaker and he can perform the total caretaking function. But he then carries a major obligation to abide by Animal Welfare



Laws, to obtain veterinary care when it's needed for his animal, to make sure its caging is proper, feeding schedules are proper, weekends are covered, and so forth. Most investigators, at least in the school, would just as soon leave this to the Animal Resources Service or Primate Service Facility which provides a specialized function in this area.

*In terms of the same core management of these people, income-wise, isn't it also true generally for technicians?*

Technicians are more vulnerable (if we're speaking again of those hired on soft money). Certainly the few layoffs I have seen come through have involved staff predominantly in the laboratory area where grant funding has dried up and the person cannot be absorbed in other funds that the faculty supervisor or the department may have. Often the technician is very specialized in terms of training and in terms of actual job experience, and so the transfer of his or her skills to something else, even in the same department, may be difficult.

So certainly when a technician accepts career employment on a grant, there has to be an understanding--there should be--that that is soft money.

*These people too are unsung heroes.*

That's true. I wish that we could give more recognition to staff employees. The University tries to do so through a number of avenues, but still these people work behind the scenes for the most part and many of them wouldn't want any publicity. But it's, I think, very pleasing to see occasional articles in the paper about a technician who's maintaining a collection of herbs, or someone who's associated with this or that field who has made a career of that and has done remarkable work that's being recognized.

*I was present at a ceremony in clinical pathology the other day where informally a staff person was recognized for so many years of service and there was a warmth (a real genuine warmth) that I think is quite rare in any work.*



It's true. I had a very warm feeling when Beanie Reynolds retired from our office recently, and in fact I found myself cutting the articles out of the paper because I felt that here was recognition for the long hours which had been spent--long hours spent not because it was a job necessarily, but because it related to students and to individuals.

Certainly the staff are unsung heroes behind the scenes. It most definitely is a teamwork situation. The faculty are the key resource in any of our programs--any academic program--but the support people are there to maximize the effectiveness of the academic personnel. When we have a very good group of people, we tend to find a considerable seniority, for example, among our laboratory people--people who have been with the school twenty years and enjoy it now as they enjoyed it twenty years ago. They've seen a lot of changes. The school perhaps isn't as personal from their standpoint as it was when there were many fewer people. They perhaps don't know as many, and can't know as many. We really have a core group of people who have been with the school many years serving in a staff capacity.

In talking about the academic staff and in talking budget, and as we talked preceding this interview, the strict full-time salary plan perhaps is something of interest to comment upon. The strict full-time salary plan is the plan for the faculty of the School of Veterinary Medicine. It was approved for use in the school in November of 1968, and it was prompted by the need to become more competitive in the recruitment and retention of our faculty. Our relative position with respect to recruitment had been deteriorating.

We had positions open which we could not fill, and we expressed our needs to the president's office. These were answered in terms of a strict full-time salary plan. It borrows upon a concept utilized in the medical schools, and specifically in the school of medicine at Davis.

Let's back up here. At the time of the approval of the salary plan our faculty was on what is called the regular eleven month scale, the fiscal year schedule. This is the salary schedule in use elsewhere on the campus here at Davis. The adoption of the strict full-time salary plan [SFT] raised the salary scale to what we hoped would be a more competitive level. Approval was granted with the understanding that one-half of the cost difference between the regular plan and the SFT plan would be financed by the faculty themselves (through their own efforts). The other half of the cost would be born by the state.

That half of the differential cost which the faculty supports through its own efforts is funded in several ways. One way is through faculty effort charged to contracts, grants and gift funds. A faculty member will indicate to the granting agency that he or she will perform, say, 20 percent of his or her time on that grant, and we require that a certain proportion of that effort be directly charged to the grant. Those charges are then pooled toward the support of the salary plan.



A second way of funding the plan is through a surcharge on our vet teaching hospital bills. This is built into the rate system and doesn't show as a line item. This is one way the clinically-oriented members of our faculty can contribute to the plan.

A third way is through consultation fees which are turned over to the plan by the faculty members. When a faculty member consults with a drug company, for example, the fee must be turned into the strict full-time plan for its support.

So these are the three areas from which we draw our income to support this salary plan. The plan has certainly improved our competitive position. We have to keep an eye on it, however, to make sure over time that the salary scale is realistic in terms of the competitive market.

*If the half that is actually provided by the faculty themselves was not provided--would they still receive the full salary?*

The terms of the plan are such that if the nonstate funding is not generated, the plan is then in jeopardy. And we originally discussed that certain faculty would go off the plan. I gather that that would start at the senior level and work down, because the pressing need is to be competitive at the lower end of the scale (at the entry levels). The statement signed by the faculty indicates, "If funding is insufficient, the plan may be terminated for certain or all faculty categories."

*Do all of your faculty have eleven month appointments as you stated, even though they may not have a joint appointment with the Agricultural Experiment Station?*

Yes they do. The teaching hospital is a year round operation. We have students as well as faculty there during the summer involved in instructional and patient care activities. Our house officers, who are registered students, are on annual appointments in the hospital, and so they're there throughout the summer participating in a learning experience.

I'm wondering if there's anything that we haven't covered here. Our faculty have generated in excess of thirty contracts and grants with federal agencies.



*You're talking about research?*

Individual research projects.

*Some of them, I understand, are very substantial. Seventy-five thousand a year or so?*

That's correct. Certainly one of the major ones now is air pollution project, under Dr. Donald Dungworth's direction and coordinated with the Primate Center. There are other grants which a number of our faculty have had for many years.

*Dr. Jasper had one.*

Mentioning Dr. Jasper, he currently has two agreements in effect with the state of California through market orders involving mastitis research.

We encourage our faculty to seek out extramural funds, realizing that the departmental support budget can only provide a minimum level of research support.

*Is there encouragement of alumni to provide grants?*

We have not fully developed this. We've certainly considered the desirability of developing our alumni contacts generally. First of all, we feel we have an obligation to keep alumni informed as to what's going on in their school, and we have plans in the mill in this area--for example, a newsletter to alumni. We annually schedule a conference which our alumni and other practicing veterinarians in California can attend. We'd like to do more than this. It's a major effort, though.

*The school has just reached a point now really where the mass of alumni is sufficient, I suppose, to be worthy of this kind of activity.*

That's right.

*How many alumni are there? About 1,000?*



I really can't answer that. This area is under Dick McCape's responsibility as associate dean of public programs. And he's been trying to formulate a program oriented to alumni.

*Can you tell me what is the tuition for a freshman, and continuing what will it cost him each year for the four years?*

The fees that the freshman D.M.V. student pays are the same as those paid by students elsewhere on the campus. As I recall, they're \$670 per year (if the student is a state resident). A non-state resident would pay \$2,170. So there's no difference in fees for vet school students.

*What would a student's lab fees be per year?*

We don't charge a lab fee, so these in effect are the only fees. We have a key deposit--we assign lockers--and I'm not sure now whether we're obtaining a deposit on that, but it's minimal. There's no fee which is tied to instruction (there's no lab fee).

*So the only other instructional costs would be books?*

Books and instruments. I know our Associate Dean of Student Services Office has formulated estimates of costs in this area in order to inform the UCD Financial Aid Office about needs of our students.

The average of completed college years at entrance has been running in excess of four years of college, so we're talking about a mature student, a student who often has a family to care for. The financial needs are not those necessarily of a single student whose commitments are minimal, but rather one who has a family commitment as well, and perhaps past debts from college activity.

*Does capital funding come under your office in any way?*

It doesn't, Hal Parker, as the coordinator of Physical Facilities and Planning, has been working directly with this. The dean has taken an active role as well. I get involved really



on the periphery to the extent that any plans would reflect on our support services, for example. Since the development of the space configuration is so closely tied to the academic program, we have looked to Dr. Parker to be the liaison with our faculty in terms of articulating the needs for space, the development of multi-disciplinary labs and so forth. This then is largely out of my area.

*Well, thank you very much.*







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## Stewart H. Madin

### Interviewer's Notes:

These interviews were conducted by A.I. Dickman in 1975

### Curriculum Vitae:

**Professor of Public Health, Epidemiology and Preventive  
Medicine**

**Professor of Experimental Pathology Microbiology, University  
of California, Berkeley**



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## Stewart H. Madin

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*Dr. Madin, how were you involved in the division of veterinary science?*

I first came to the Division of Veterinary Science in 1939 when I was still an undergraduate student at Berkeley in bacteriology. I got a job there, working for Professor Jacob Traum. He was working on a virus disease of swine known as vesicular exanthema of swine, and needed someone with a strong back and a weak mind to take care of the hogs and help him inoculate them and so forth. I had always been interested in veterinary medicine and in fact had already applied at that time to a number of schools of veterinary medicine. There were only about twelve in the country then and getting in was perhaps just as difficult then as it is today.

Between the time of 1939 and September of 1940 when I eventually did go to veterinary school at Texas A & M, I worked odd hours for Professor Traum on this particular animal disease project. Then in 1940, in September, I was lucky enough to be accepted at what is now Texas A & M University, then Texas A & M College, and before I left for veterinary school, Dr. Haring who was the chairman of the Division of Veterinary Science at that time called and told me that there was great interest in the state to have a veterinary school in California and that he thought that within the next few years, after the war ended, things would be forthcoming for this. And so he asked me particularly to make some pen and ink sketchings and drawings of the facilities at Texas A & M while I was there as a student, not only to make drawings, but to criticize them in terms of whether they suited their purpose for both the faculty as well as the students and to make any suggestions or comments or criticisms that might be appropriate at a later date.

I came back during the summer of 1941 and again worked for three months with Professor Traum and even then there were some stirrings, if you will, of plans for the school. However, it wasn't until after the war I came back to the Division of Veterinary Science, first after I had graduated in 1943 and then I stayed at the Division for perhaps



six or eight months. I then went into the navy and then two years later was discharged and came back again to the University. So, this would have been in 1945, '46, and at that time then the actual planning for the veterinary school began in earnest. There was a small group of us who essentially were assigned to begin the preliminary work. The man actually in charge, as I recall, was Professor Schalm. And Schalm and Professor De Ome and Dr. Julian and Dr. Maderious and Dr. Ormsbee and myself--we were sort of the nucleus, if you will, of the planning group--and each of us was assigned to different areas or different academic disciplines to plan out.

It had originally been assumed that I was going to go to Davis, or to wherever the veterinary school was going to be, because the location wasn't decided at that time, to be a professor of pathology, and so the task of planning the pathology laboratory sort of fell my way as did the small animal areas such as the kennel, and the clinic. The task of planning anatomy went to Julian because he was interested in anatomy and intended to pursue that field. And De Ome was interested in pathology and histology and microbiology. Schalm was particularly interested in clinical pathology and had planned those areas. Maderious was a large animal specialist--horses, cattle--as was Ormsbee, and they were interested in planning the large animal facilities such as the clinics, the barns and that kind of thing.

Now, the planning was almost in a vacuum in a sense. What we were doing really was drawing plans or projections of rooms and buildings and laboratories and offices and the like without knowing two fundamental things--one, where the veterinary school was going to be located and secondly, what the academic plan of the veterinary school was going to be. Now, you can't have a building, or at least it's difficult to have a building that's functional unless you know these two things.

And at the time, as a matter of fact, only prior to 1946, I don't remember just when, but the decision had been made as far as I knew at the president's level--the President of the University, that is--that the veterinary school would be located on the Berkeley campus. And it was to be located essentially nearby if not on the same location as where the Division of Veterinary Science then was in Strawberry Canyon.

*There was also talk about the Gill Tract in Albany.*

Yes, the Gill Tract was supposed to be part of it. The whole idea revolved around the following: one, the area that then housed the Division of Veterinary Science was to have new buildings put up for subjects that were not already being taught on the Berkeley campus, such as pathology, for example, and clinical pathology. Those subjects that were already being taught on the Berkeley campus, such as anatomy, physiology and biochemistry, would be taken by the veterinary students as part of the regular curriculum.



And then the animal facilities *per se*, the large animal barns, the kennels, etc., would be placed on the Gill Tract. This was, as far as I knew at least, the extent of the planning at that time.

It must be kept in mind that there was also a Division of Veterinary Science group at Davis and they, of course, were very anxious to have the veterinary school on the Davis campus. And there was some degree of jockeying back and forth for influence as to where the school was eventually to be located.

But, at least in the early part of the planning, it was definitely understood by all that it was to be on the Berkeley campus.

*Do you recall the various arguments, pro and con, regarding location?*

Well, I can only tell you what I heard, because most of us at that time, with the exception of Schalm and De Ome, were far too junior to be involved with higher policy.

The arguments for Berkeley were: one, that there were already many courses being taught at Berkeley that were quite appropriate for the first and second-year student, such as anatomy, physiology, etc.; two, that the aura and the academic standing of the Berkeley campus would immediately insure high academic standards for the curriculum of veterinary medicine. Because, at that time at least, with only twelve schools in the country, there were questions being raised as to whether veterinary medicine was really a highly-disciplined academic subject.

It was also anticipated that the medical school and some of its facilities could be used by the veterinary students, either as exchange students from time to time or actually taking some of the courses that the medical students took that would be appropriate to veterinary medicine, clinical pathology for example.

The other argument was, strangely enough, that the total animal population in and around Davis was too small to support a veterinary school. And there were many figures brought forth to substantiate this. I can't recall them in detail now but it was clearly established at that time that the Berkeley area, or the East Bay area, had many many more small animals, pets and the like, than would the Davis area and that in addition, strangely enough, there were many many more cattle, horses, in the Berkeley area within say a twenty-five mile radius, than there were within that same radius in Davis.



*Was this over in Marin County?*

Not only Marin County so much, but Contra Costa County. In the Davis area animals would have to be trucked in from long distances actually to provide the same kind of pool of patient conditions.

We had of course at that time--Petaluma was the center of the largest poultry area probably in the world and the Division of Veterinary Science had many projects going on at Petaluma with the various breeders. So, there was no lack of commercial poultry in the usual sense of the word. And in all probability, in terms of pet birds, the Berkeley area then, and perhaps even now, would have been a much larger source of patients than the Davis area. However, it didn't turn out that way and the school eventually went to Davis.

*Who were the leading proponents of locating it at Berkeley; was Dr. K. F. Meyer one of them?*

He could have been, I would not necessarily have been aware of it, because of my very junior status at the time. But, within our own group at the Division of Veterinary Science, I think it's fair to say that there was an overwhelming number of people who favored Berkeley. Perhaps the only people who were a little skeptical were those who had large animal interests. I'm sure "K.F." was in favor of Berkeley, although I can't quote you "passage or book."

The people who were mostly in favor of the Davis location were those who were at Davis. At that time the Dean of the College of Agriculture, Professor Hutchison, was in favor of Berkeley and then suddenly changed his mind later on.

*Why?*

I don't know. If it was known, it was not known to me. So, the location was a constant source of subtle friction, if you will.

*Since it did go to Davis, do you have any knowledge--apart from the fact that those people already in the division at Davis wanted it--as to what other forces or influences made the decision for Davis?*



To be honest with you, no. It seemed to me at the time that the people in the livestock industry, for example, who were very much in favor of a veterinary school seemed to more or less leave it up to Dr. Haring and our senior staff as to the best location. I never heard Haring say in a meeting that he had any fears that the livestock industry would not support whatever location was chosen by the University. So that, my guess is that whatever the reason for the eventual choice of Davis over Berkeley was a University decision.

In retrospect, I can think back now to the fact that the Davis campus was in the process of developing, or going to be developed into a full-fledged academic community with all the necessary disciplines and, as a matter of fact, the School of Veterinary Medicine was supposed to be the first big item in this development, not only as a very large school, but as a professional school. And, of course, subsequent to that they have developed the medical school and the law school. But aside from that I have no inside information as to what turned the eventual decision.

*Will you resume your discussion of the planning?*

Since we had the problem of not knowing just exactly where we were going to be located and we had at that time no well-formulated academic plan, we decided to work with what seemed to be the easier of the two, in terms of resolution, namely the academic plan.

Now, there had been much criticism, particularly by young or recent graduates of veterinary schools about the curriculum in the established veterinary schools.

*Along what lines?*

Well, there was an enormous amount of--I think a better word would be perhaps an inordinate amount of time spent on anatomy--not that I'm opposed to anatomy *per se*, but, for example, the school I went to, we spent four years in anatomy and I must have dissected I don't know how many heads and necks of horses which even in the time that I've been in the profession the horse has had only a relatively insignificant impact on veterinary medicine.



There was a great deal of discussion as to how one would relate the then so-called basic sciences to the clinical practice of veterinary medicine. There was much concern among students that the clinicians were so far removed from the basic sciences that there wasn't really much point in taking the basic sciences. And this was an obvious fallacy. So that one of the central themes of the academic plan that evolved, and I might add that essentially the same people that I mentioned to you earlier as forming the nucleus of the planning committee for the school itself, provided much of the input into this academic plan. And the plan evolved around an idea to try and bring the clinical sciences and the basic sciences together in some practical fashion. We tried to do this then through the establishment of what was then called clinical pathology. Clinical pathology was going to be a large course as I remember, somewhere in the ten or twelve-unit range, which would essentially in the junior year sit between the basic sciences and the clinical sciences. And, the idea was that a student would go out into the clinics as a junior and then he would come back because he would have a permanently assigned desk or work space in clinical pathology. And he would come back to this work space or desk with specimens and he would try to work them up and if there were questions that arose in his mind or that developed out of the work-up that could best be answered by the basic sciences he would go back to the physiologist, to the pharmacologist, or the pathologist, the microbiologist, to get further information. And then he would carry this back to the clinic and vice versa. And it seemed that this clinical pathology made a very effective bridge between basic and applied sciences.

So, with that in mind, one of the first things that was designed in the school was a very large clinical pathology laboratory. And then, from that we sort of backtracked down, if you will, to the basic sciences and we tried to design as much in the way of useful, functional laboratory and office space as possible. The idea was that as far as office space was concerned, each professor was to be considered as being not only a teaching professor but a research professor as well. This was in keeping with the Berkeley tradition, and so each one would have his office and his private laboratory. So that was one consideration in the design of the building.

Another consideration was that we would try and make the laboratories as flexible as possible; we were able to foresee in our dim vision that the number of candidates to the school would increase over and above the forty that the school was originally planned for. We had no idea that the school would increase to the extent that it did eventually. We had felt that perhaps somewhere between fifty and perhaps even fifty-five could be accommodated in many of the laboratories with appropriate shifting around of benches and tables and all that.

As I recall back now, the other thing that was uppermost in our minds in planning was that if it was going to be in the Berkeley area then it had to be a building that was, well, not necessarily artistic, but at least aesthetically in keeping with the surroundings. And, secondly, we had to make certain that it did not offend the community by having



strange odors and noise coming from it and even had the building been put on the Gill Tract this would have been a problem. Because, it was obvious that the area around the Gill Tract was not only well built up, but could expect to be even more so in the future.

So, a great deal of effort was put into the anatomy area, the autopsy area for pathology, the kennels in order to keep them, one, as free from odors as possible and two, as visibly aesthetic as possible. For example, much thought was given to how does one bring in a dead cow on a truck and then transport it into the veterinary hospital or into the autopsy area without it spilling blood and guts all over and in general, making a mess of itself.

So, as I recall, we spent a long time developing a system of overhead trolleys and tracks and one thing or another that went directly out and hooked onto the animal in the truck so that it was carried in with as little loss of material as possible, spillage of material as possible.

The other thing that we had to keep in mind was that each unit, and, by the way, the planning was done in terms of units; we had an anatomy unit, we had a pathology unit, we had a microbiology unit, etc., and, as much as possible of the planning was done in order that they could be essentially self-sufficient. Not that we didn't think that everybody ought to cooperate, but we knew perfectly well that if they were self-sufficient, at least they would work and they wouldn't be dependent on some other area having to participate with them in the teaching or in the research or both.

So, we tried to make these areas as sufficient unto themselves as we possibly could. This, however, also led us into the problem of how to make these areas expandable. And so we essentially conceived the ideas of putting up limited numbers of certain kinds of units but putting down on paper the full number so that at a subsequent date the next section could simply be sent into the plan and the kennels are a good example of this. The original plan called for four such kennels but I believe that only one was ever built. But, originally, there were supposed to be four and the idea was that we would build one and as the hospital became more and more crowded over the years, another one would be put up and another one and another one. The same was true of the large animal barns; one was built, there were supposed to be two eventually, perhaps even three, space was left for those.

One of our biggest problems came in the area of what one might call research for the faculty. And what is usually referred to as experimental surgery and experimental pathology and experimental pharmacology for the senior students, or the more senior students. Now, this kind of activity involves various operating units, operating rooms, tables, etc.; if you're going to do research on animal diseases, you have to have isolation quarters, you have to have a place where you can incinerate the carcass, and you have to have a place where you can sterilize this thing and the other.



And, the University had had very bad experience from trying to put too much of this kind of thing into buildings whose primary function was teaching, in terms of those buildings having large numbers of lecture rooms, offices and libraries. For the simple reason that if you put animal quarters in with these buildings there were always odors, there were always animals escaping, it drew insects and all the rest of it. And so, it was decided that there would be an entire wing of the school that would run through two floors, or both floors as it turned out. And this wing would house the experimental pathology, the surgery, the pharmacology, the research activities of the faculty. And, one would enter this wing through suitable air lock, and the like.

*This would be a maximum security building?*

Well, not in today's lexicon of maximum security perhaps, but it would certainly have been a maximum security in our thinking then. It was much better than anything we had ever had before.

So, all of the necessary appurtenances to doing this kind of research were placed in or designed to go into this one wing. This included such things even as cage-washing facilities, big mattress sterilizers, etc.

We felt that, for our time, the school would be self-sufficient for a number of years regardless of its location. That is to say, we could operate this either in Berkeley where it would have to have some separated units, or we could operate it elsewhere if it were all put essentially under a single roof. And, of course, in due time, that's what came about. It was decided that the school would be located at Davis and the planning then, fortunately, the decision to move to Davis was made before many of the plans had hardened. The academic plan was reasonably well in hand then, so we knew in a sense what we were planning for. And, so when the final decision that it was going to be located at Davis came, it did not take much of a transition factor to plan the buildings for that kind of an environment.

*Wasn't the academic plan that was actually accepted very similar to the academic plan you and the others had conceived?*

Yes, yes, as a matter of fact it was. And, I suppose we have to take full blame or credit for whatever came out. There were very few changes. I can always remember one of the very senior members of the group at the time, Professor W. H. Boynton, was saying that--well, we used to have staff meetings fairly regularly in which everybody would put



in their ideas--and Boynton, from time to time, would get up and say, "Now, I am not going to say a thing about what's going to go into this plan because I'm not going to be a student there, and I think these young fellows ought to be just left alone." [Laughter.] And, as a result, he was very supportive of our ideas.

*Haring must have felt that way too?*

Well, Haring was a very innovative individual, with an enormous imagination. From time to time he would get rather fixed ideas about things which we would have to argue him out of. But, by and large, he was very supportive of the vast majority of the ideas that were put forth; Traum also. And, both Haring and Traum added ideas of their own because they were, both of them, far ahead of their time in thinking.

*Did Traum work with you in planning a certain portion of the building?*

Well, I can't really say; he would not sit down with you, for example, for any length of time with paper and pencil and draw plans or diagrams. But, what he would do, he would come around and he would look over your shoulder and then he would say, "Now, how is that going to work?" And, then you would tell him how it was going to work and then he would promptly tell you where you had made a mistake. And, usually he was right. He had an enormous insight in how things could fit together and was an exceedingly valuable person to have available so that you could take something to him on a trial basis. And, very often he could immediately spot the weakness and correct it before it had done any harm.

*By the way, did the committee still include Ormsbee and Maderious?*

Well, they were, as I recall, there for only a relatively short time.

*So, it was basically you and Julian and De Ome and Schalm?*

De Ome, Schalm, Julian and myself. Well, at least we were the ones that spent most of the time putting paper to pencil and drawing lines and diagrams.



*How did you actually work? Would you meet in the morning--the four of you--and just keep working together as a unit or did you work separately?*

We did a bit of everything, really. At first it was simply a matter of the individual taking his assignment and trying to put it down on paper, something that would fulfill the requirements of that assignment. And then, we began to meet, it must have been once or twice a week, sometimes as a group and sometimes just two of us would meet together--De Ome and I, for example, spent a great deal of time together during that time.

But, our planning didn't really gel until the architects finally were named, that is, Blanchard and Mayer. And this was, at least it was my first experience with working with architects. The University had appointed an architect, Bob Evans, as well.



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## Margaret Meyer

### Interviewer's Notes:

These interviews were conducted by A.I. Dickman in 1975.

### Curriculum Vitae:

**Professor of Veterinary Public Health, School of Veterinary Medicine, UCD; 1972-1987**

**Senior Laboratory Technician, Department of Micro Biology, School of Veterinary Medicine, UCD; 1947 -1972**



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## Margaret Meyer

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### Background Facts

*Dr. Meyer, would you start out by giving your origins--if you wish--your date of birth.*

Oh, yes. I was born in Westwood, Lassen County, California, which is now a lumber ghost town, in 1923. During the Depression in the thirties my family moved to Sacramento. So I went to school there, including the Sacramento City College. Then I went down to Berkeley to the School of Public Health, and graduated from there in 1945. I spent a year with the Public Health Service at Bethesda, Maryland, as a public health statistician, and was miserable in the environment and miserable in the job--I was not a statistician; I was a biologist. But it was during the war and I took what job was available--what the government said they needed people to do.

### University Of California, Davis

Then I came back to California in 1946, with the only thing in mind that I wanted to do was to work for the University of California. I came over to the Davis campus and was interviewed by Dr. George Hart. He said he didn't have anything available at the moment, but to go see Hugh Cameron. I went to see Dr. Cameron and he said he didn't have anything available at the moment, but that he thought that Drs. Hinshaw or McNeill did--Dr. Hinshaw was in a lab right next to him. So I started in the latter part of 1946 working half time for Drs. Hinshaw and McNeill as a bacteriologist in their poultry pathology laboratory, with the understanding that the minute anything became available with Dr. Cameron I'd be right on the spot.



## Brucellosis Research

Shortly after Christmas, around the first of the year--in fact, on January 1, 1947--I started working for Dr. Cameron as a bacteriologist in brucellosis research, and I've stayed with it all this time. But I went up through the technical ranks. We did research together through 1964. In the meantime I got the desire and felt that I was qualified to go for the Ph.D. in the field of animal pathology, which I did. From 1958 to 1961 I worked full time for the University and took my degree in animal pathology.

*When you came here, then, what was your degree?*

I came here with a Bachelor of Science from the School of Public Health at Berkeley and worked as a professional bacteriologist (they called them lab technicians then). I became absolutely fascinated with the disease of brucellosis and did my thesis on it, on the taxonomy of the genus *Brucella*, and worked a lot on the epidemiology of it.

*When did you develop your respirometer technique?*

I did that when I was working for my Ph.D.; in fact, I had explored the possibility ahead of that, and realized that it would be a good technique--that it had possibilities. Then it was a matter of getting enough strains from all over the world-- getting enough strains of *Brucella* from different animal sources, all the different hosts that would be possible--and just simply examining them and seeing if they held to a pattern.

*Did this technique use oxygen?*

This is on the Warburg respirometer. Its oxygen uptake on individual substrates of amino acids and carbohydrates. Each species does have a different pattern of utilization. The three classical species could very beautifully be separated and identified by this method, which then reflected back to their epidemiology and animal source.



*Had someone else found that this Warburg apparatus would work in this way? Or did you do that yourself?*

No. The Warburg had been used many, many times-- this is what it was designed for, to measure oxygen uptake, to measure metabolic processes in bacteria and other cellular tissues. All I did was apply it to bacteria on a wide scale. This was the first time it was used for differentiating species of bacteria, and I don't think it's been used for that again because of the tediousness of it. Many of the other general bacteria can be separated by less tedious process. Once the species were identified and differentiated by their oxidated respiration, then it was possible to go back and use less complicated and more conventional methods, because we knew which ones would then work--such as bacterial phage, various aniline dyes that they use for differentiating not only Brucella but other bacteria. Now the Warburg respirometer is used when there are strains that come from unusual sources, strains that have few unusual features that can't be identified conventionally. So it is not used routinely, and as a matter of fact, the whole method wasn't designed with that in mind. It was designed basically to understand the taxonomy of the genus and to see if we couldn't use the less complicated tests routinely, and we can.

*So you were seeking cultures from all over the world?*

Oh, yes, yes. In fact, there's some of my correspondence--I saved the stamps. I think I corresponded with almost everybody in the world that has ever published on brucellosis in order to get their cultures. I must add that there was never a more cooperative group of people to get cultures from all over the world. The only place I haven't been able to get a culture of Brucella is Red China. I got a couple that came out through Malaysia and into Hong Kong and then into the Walter Reed Army Hospital and then to me, that were originated in China. The others have come mostly from the mideastern areas, which is where the greatest problem existed on identifying the Brucella, and from Russia. I got a lot of strains from Russia, and many, many from South America, and many from the Orient.

### **Brucella Detective Story**

*Was the strain that you got from Alaska solicited by you, or was that purely accidental?*



Initially it was accidental. They sent it here to have its identity confirmed. They had identified it as possibly a *Brucella melitensis*.

*Who sent that to you?*

That was sent from the Arctic Health Research Laboratory--Dr. Huntley sent that.

*Would you tell what developed after that?*

This is one of the most fascinating episodes of my life! The culture was *Brucella suis*, and it was slightly different from all other types of *suis*-- it was a separate biotype. It had the same description as strains being isolated from reindeer herds. At about the same time, Dr. Roberta Toshach in northern Canada sent some cultures that she had isolated from Eskimos in the Mckenzie River delta, and they had never been out of that geographic area.

This was also true of the strains that were isolated from the Alaskan Eskimos--they had never been out of their geographic area. So it was clear that the human cases were arising from some source that was close to home. Toshach then examined reindeer serum and realized that the reindeer--the species *Rangifer tarandus*--had antibody titers to brucellosis, and that this must be the source for the human being. The cultures that came from Alaska and the cultures that came from Canada were identical.

Then [the next step] was to try to get some from Russia. I wrote to the UN, I literally badgered the World Health Organization, I wrote to Russia directly; I think I tried every source--the International Health Division of the National Institute of Health. It was impossible to get strains of *Brucella* from Russia.

*What year was this?*

This was in 1961-1962--it was in 1962 that this started. The Cold War was at its peak, yes. I was trying to find out how the cultures in Alaska and Canada could be the same as the ones in Russia. The technical descriptions of the ones in Russia were the same as those that we were handling from Alaska and Canada. It was really abundantly clear that they were all the same strain. Now the point was, how did the ones in Siberia get to be the same as the ones in Alaska and Canada?



I ran across an article; in fact, it was a piece in Newsweek Magazine, and it showed a picture of Admiral Byrd's boat being towed from Northampton Navy Yard, or Philadelphia--anyway, coming down the Atlantic coast--and it got caught in a storm and broke loose from the tug and sank. Now, there was a little piece of about ten lines in Newsweek, under National Affairs, that this historic ship had been lost. And it gave a little history about the fact that it had transported reindeer from Siberia to Alaska in 1893, when the Alaskan Eskimos were starving. That was all it said--it didn't have any further history than that.

So then I tried to find out about the Bear-- this was the name of the ship--and again I wrote to Annapolis Naval Archives, the Congressional Library; I wrote to Newsweek, to their editor of national affairs, not once but several times, but never got an answer as to where they got this information--just to give me a little bit of a clue, in the library, to find out where they had this information that this ship carried these reindeer. I met with no success whatsoever--I couldn't get a lead through the normal sources, on how they got the reindeer from Siberia to Alaska, or where this was documented.

I was sitting in my office one day, and Dr. Al Edwards, who was then in charge of our Experimental Animal Resources, came in. He hadn't really particularly known that I had been so frustrated in trying to get this information. I had a long talk with him about a lot of things, and he knew I was interested in his work. So he brought in a man and introduced me and said, "Margaret, I think you'd like to know this man; he's a very interesting character. He was on Admiral Byrd's ship. His name is Dr. Poulter. He's interested in sea mammals, and he accompanied Admiral Byrd on two expeditions on The Bear."

Really, I grabbed him [laughs]! It was a totally incredible circumstance. But the whole thing was incredible! So, I said, "Oh, I want to know about The Bear--really, I don't care much about you right now [laughs]. He laughed--he wasn't offended. I told him the background of it. I told him I wanted to know about this Bear. He said, "Well, by strange circumstance, one of my shipmates wrote a book, *The Biography of the Barkentine Bear*, and it details every reindeer that ever went on board." I said, "Fine; I want to get it." Well, I had to get it out of inter-library loan--it was published in about 1930 or 1932--and I got it out of Los Angeles.

That led, then to the fact that the log of The Bear is down at Treasure Island--not at Annapolis or the Congressional Library or anywhere else. I got some photographic copies of the log of The Bear at the time they put the reindeer on. What happened was that the ship that Byrd purchased was originally used in what they now call the Coastguard, formerly called U.S. Maritime Service. Anyway, it was in the Maritime Service and it patrolled the coast of Alaska. The captain realized that the Eskimos were starving, and he got permission from Congress to go over onto the Russian coast of



Siberia and pick up some reindeer to bring back to the Eskimos. The first load of reindeer were only three--that's all they could catch at the time. Then they went back and got some more. In the intervening years from 1893 on up to about 1900, they brought over several hundred reindeer. They established reindeer stations where they raised the reindeer in a semi-domesticated state. The Eskimos used them for meat and milk and hides, and they had an industry that had at one time up to close to a million animals--reindeer.

They got into southern Alaska because (I like to tell this story, because if it weren't for the fact that people were starving, this wouldn't be documented) during the Yukon gold rush the miners were starving, and they herded reindeer into southern Alaska down the Yukon, and reindeer became established there. Then in 1933 the Eskimos in the northern Mckenzie delta were starving and the Canadian government asked the United States government to herd some reindeer overland to the Eskimos in the Mckenzie River area, which they did. Overland they herded thirty-three hundred head of reindeer into the Mckenzie River delta for the starving Eskimos there. This was how the disease was spread: it came over from Siberia on board Admiral Byrd's ship; it maintained itself in these animals; it was spread to southern Alaska and then to northern Canada.

After I was able to get all this information together I did publish a paper on the disease of *Brucella suis* in the Alaskan reindeer, *Rangifer*, and it[s] spread to the human being. After that paper was published there was delivered to me a box from Russia that got into this country without being inspected. Normally, in order to get a culture of *Brucella* from any country outside the United States, I write to the federal government and get an importation permit, send it to the people that are going to send me cultures. If you don't have this permit glued to the outside of the culture container, it will not be passed in by the customs people because of the threat of bringing in some exotic disease. Anyway, this box came in from Russia-- there was no question of its origin, because it was all in Russian and French and wrapped in rag instead of paper binding, and it had twenty- four strains of *Brucella* from the reindeer in Siberia. Now that the Russians realized that they had mis-identified it, they wanted it worked on, whereas before they wouldn't even send me one--they wouldn't even answer my letters. So I did get twenty-four strains of *Brucella* from *Rangifer tarandae* from Siberia, sent by the Russians.

Since then, I have been out to Siberia and visited with them. In fact, we still correspond; I just recently--a year ago this Christmas--got a monograph from Dr. Pinnigan on all of the work he'd done in the last three or four years on brucellosis in the northern reindeer. It was an incredible story.



*It was just sheer chance that it got through customs?*

It was sheer chance that those cultures got through customs; it was absolute total coincidence that Dr. Poulter dropped into this laboratory at the moment that he did. If he'd come in two years earlier or a year earlier, it wouldn't have meant anything to me, because I wouldn't have been wrapped up in these reindeer so totally.

*When you got the first culture, wasn't there reindeer in the Mckenzie River delta at that time that you would automatically suspect?*

I think Toshach did suspect it, but when the first culture came from Alaska, they thought that the Eskimo that became ill had gotten it from a seal, for some strange reason, because he had recently caught seal and apparently opened it to get the blubber (or whatever they get out of seal). They just tried to put two and two together and figured that this would be the source. I just don't think they had thought to look at it from the point of view of the large, semi-domesticated animals there. The disease is still very much of a problem in Eskimos because by tradition the Eskimo hunter that kills the reindeer is the one that is given the raw liver and bone marrow to eat--the prize of the hunt. Of course, this is where *Brucella* organisms stay when they are in the animal body; this is one of their main locales. There are still many, many cases of brucellosis in the Eskimos in Alaska, partly because of this practice, and secondly, they do use reindeer milk. *Brucella* organisms come down in the milk of infected animals. Also, they take the hides off and scrape them, and muscle can have *Brucella* organisms in it. There's wide possibility of exposure when you're handling an animal carcass, and this they do; so they still have a problem.

## **Brucellosis Control Measures**

*Has it been eradicated in other places?*

From reindeer?

*From bovines and swine and other animals that carry it?*



It's been eradicated in the Netherlands--that is, Denmark, Norway, Sweden--but only because they've had a very, very intensive eradication program. They first eradicated it in cattle, and then they've been working steadily eradicating it in swine. The only countries that have freedom from brucellosis in any animal species are those that have had very intensive eradication campaigns. Even in the face of intensive campaigns, it is not always successful because there are wild animal reservoirs. One of the problems in Central Europe, which more or less recurrently plagues Denmark, is the fact that the wild hare--the *Lepidus timidus* species--is the natural reservoir for *Brucella suis* type two. The hares spread it back to the swine; so it goes back and forth a lot. So while they have had successful eradication campaigns, they have to be constantly testing their swine because it comes back periodically from the wild hares into their other populations. But the one that gets into swine would be *suis* type two, and it doesn't spread to cattle, fortunately. So their cattle remain free.

*I know you're not an Economist, but do you happen to know the agricultural-economic loss each year because of Brucella?*

I could look the figures up, because it's been tabulated out on a cost-benefit basis. But the loss of a dairy calf, and especially a female dairy calf-- you figure the loss of all her progeny, plus the drop in milk production, plus the spread to other animals-- is millions of dollars a year. I don't know where to put the exact figures, but it's somewhere in the literature. It used to be, and I'm sure it's more now, five hundred dollars per abortion, initially, and then you calculate from there what the impact of that would be on the future.

*Is it still transmitted even today to those people who handle raw meat?*

It's transmitted largely now through swine. There's been an eradication program in the United States that's been fairly successful in eradicating bovine brucellosis, but there are still occasional cases of *Brucella abortus* of cattle origin from states where they have not completely eradicated bovine brucellosis.

The big problem in human brucellosis in the United States now is among slaughterhouse employees in slaughterhouses that handle almost entirely carcasses of swine. There are periodic outbreaks. A recent one in California involves, over a period of two or three years, some two hundred cases among human beings. From 1960 to about 1965 there was a regular epidemic of *Brucella suis* infection in the packinghouse employees in the midwest, particularly Iowa, where they slaughter a lot of swine.



The number of cases has gradually declined over the years, until now it's probably on a plateau for awhile, until we can eradicate brucellosis in swine so that packinghouse employees won't be exposed to it. But right now that is very much an occupational hazard, and it can't be eliminated from the human being until all the vestiges of it are eradicated from the swine.

*The fact that milk is now pasteurized reduces the spread in humans?*

The greatest single source of *Brucella* for the human being is unpasteurized milk. It doesn't make any difference what country you're in or what animal source you're talking about; if the animal is the source of milk for human consumption, and it's a species that's susceptible to infection--and almost all domesticated livestock are susceptible--then this is the chain of transmission to the human being, by and large. The greatest way to reduce brucellosis in the human population is to boil or pasteurize milk. The other sources are direct contact with the animals, which are usually minimal in number--you have a direct contact with an aborting animal by such as farmers and veterinarians, but for the public at large, no matter what country you're in, [the main source] is infected milk.

*How do you get it when you're handling animals? Is it carried in the air?*

Usually you have a direct contact--either you cleaned up an abortion or you slaughtered an animal for consumption--and you've actually handled the tissues. However, it can be airborne--droplet born. In the slaughterhouses this is probably how human beings are infected--through their eye. This is the main way the disease enters the body--through conjunctiva of the eye. It can be inhaled; it can be ingested; it can go through cuts in the skin--through any portal of entry it sets up an infection. Outside of ingestion in milk the next [most common source] would be the eye.

## Current Research

*What is the main thrust of your present research?*

The main thrust of my present work, which is just now beginning to be fruitful, is to determine which of the three classical species of *Brucella* is the parent strain--or parentage--of the new derivatives. One of the current problems in the field of



brucellosis is that there are the new species of organisms--so called new species--and the only place they could possibly come from are from the present species. By some mechanism, or by some set of circumstances in nature, there are these new varieties of *Brucella* that are infecting different hosts. So in areas where there has been an eradication program and they've successfully gotten the disease cleared from cattle or swine, there is a new host with a different type of a *Brucella* organism. This has occurred in--well, one of the first occurrences was the *Brucella suis* type two in Denmark, that occurred in hares. It soon became this whole reservoir of a different kind of a *Brucella* organism. The next one was a *Brucella ovis* that occurred in sheep--a whole new organism that is a new type of *Brucella*, with a new host specificity. Then there's the *Brucella canis* in dogs.

I was wondering why, with an abortion organism, nobody had looked at the effect of steroid hormones on *Brucella* organisms. To do a little pilot work on it, I put some of the steroid hormones into media in the same way we put dyes into media to differentiate the species, just to see if you could get a level where you could get inhibition of growth, or maybe you'd stimulate growth; I didn't really know which way it would go, but I thought one or the other would happen. It didn't do either. It put them into the L form of the organism, which is filterable. At first I thought a phage had been released by the action of the steroid hormones, because the plates had these lysed areas on them. So I filtered the washings from the growth in order to look for bacteriophage and found that what I had was filterable forms of the *Brucella* organism that, when they grew back on the plate, [had a] morphology that was indistinguishable from the so-called new varieties. This set me off on another whole field of work, and, indeed, I found the parent cultures of *Brucella ovis*, which is *Brucella abortus* type two (in fact I just got the polished form of a manuscript ready to send in on it); and *Brucella canis* is nothing but a filterable form of *Brucella suis* type three.

An L form is an organism that does not have a cell wall, and when you put it back on conventional media, without the hormones and so forth, it grows back into the conventional cell wall intact form. They don't all completely revert to the parent form; a very small percentage of them are apparently incapable of coming all the way back to the parental form. They lose from four to six percent of their DNA; they don't quite get all the cell wall back, so that superficially they have a mucoid morphology, and this is accompanied by changes in their oxidative metabolism. So that *Brucella ovis*, laboratory derived, is indistinguishable from the *ovis* found in nature isolated from sheep. The cultures that go through this process in the laboratory are indistinguishable from the canine organism that are isolated from dogs.

I really think this is the answer to our problem. I don't know what we're going to do about it in the control program, but this can happen by chance in nature with the right set of circumstances. I think what happens is that *Brucella suis* type three, which is very common in swine in the midwest, by chance got into a beagle at the right time--or some dog--at gestation, and it got the right concentration of these hormones, and it goes into an



L form. We know this happens *in vivo*; we haven't realized that when you have them *in vivo* that they don't revert all the way back to their parent strain-- they stop short; by virtue of losing six percent of their DNA they change their host specificity. The problem with the canine organism probably isn't acute; it doesn't seem to be infectious for swine or cattle. It's infectious with the human being if you have massive exposure. The curious thing is, what's going to happen when the next one occurs? It may not be one that's just pathogenic for dogs; it may be something that will go back into cows. It's a fascinating concept.

Anyway, I'm working on this. Since October I have been working on four manuscripts to get this all put together in a package, because I've thought about it for twenty years and I've worked on it for twenty years, really--on the evolution of the species within the genus *Brucella*. It's something that I couldn't tell twenty years ago; as I look back now, I had to wait for certain technical breakthroughs that have happened since then, and then all of a sudden it cleared itself up. This has been a full time occupation of mine--really; I'm really turned on with this [laughs]!

*This started originally, then, with your work with Dr. Cameron?*

This started with my work with Dr. Cameron. Dr. Cameron was busy doing a lot of field work and he was kind enough to let me go on my own with the research; he realized I was interested. When I did my thesis I started to think about the evolutionary aspects of this because the organisms seem so closely related to one another, and yet they had these major differences in their epidemiology and host specificity; there was something making a break between these organisms, but they must be evolutionarily closely related. And indeed they are: one is derived from another. But once they're derived and in an animal host they seem to stabilize at that set of characteristics until such time that they go through this L form. But this happens very infrequently. In fact, I've had trouble finding strains that I can get to do it. I've had to go through about three hundred strains to find one that will do it, and then take that culture apart and do it by clones and find it out of that--maybe one out of two or three hundred of the individual clones will do it. So it's a very rare phenomenon, and it takes a certain combination of characteristics of the organism, of the host, apparently of the right concentration of hormones in the animal body at that given moment, to have it happen--to explain why it happens so infrequently and why we're having trouble replicating it anywhere, either in nature or in the laboratory. But it all started then.



As I look back and talk to other scientists, I realize that a great deal of your life is a matter of luck. The time in my life when I had the chance to go through the greatest number of cultures and work on this idea and see if the metabolic work would, so to speak, hold water--could you duplicate all of these results in another laboratory in another country under different circumstances? I had just finished my thesis, and Mr. Field from the Central Veterinary Laboratory at Waybridge was visiting Davis. He was supposed to have a half a day here, and he came through the lab. He talked to me for ten or fifteen minutes and he was very pleasant, and he went down to see other people and so forth. Then all the pilots on the local airlines went on strike and he got grounded here for a week, instead of just a few hours. He didn't know what to do, so I sent him into the laboratory to read my thesis [laughs], having nothing else to do with him and not knowing him at all. He came back and said, "I want you to come to England to do this work." It's really amazing. That's where we got confused with K. F. Meyer, because Dr. Stableforth was director of the laboratory at Waybridge.

When Mr. Field went back he wrote to me and asked me to come on World Health funds and work on the problem they were having in their cattle. They thought they had *Brucella melitensis* in cattle, and he felt this metabolic method would help determine whether it was *melitensis* or whether it was a new biotype of *Brucella abortus*. So I had made all my arrangements with Mr. Field--dates of arrival and how long I stayed and so forth--and then I got a letter from Dr. Stableforth as the Director of the laboratory, with a more or less formal invitation with a note at the bottom, "Please say hello to your distinguished father." [Laughs.] I wrote to him and said, "Is that why you're inviting me?" He wrote back hastily and said, "Oh, no." But when I got over there they thought this was the funniest thing. Their sense of humor tickled me--they laughed every time they thought of it: that they got this letter back so fast, and they thought they had offended me. I thought it was funny; we all got a big laugh out of it.

*Is your research funded mostly through the Experiment Station?*

Yes, it has been funded through the Experiment Station, and it's been funded through the National Institute of Health. I had just finished my degree in January of 1961; in the fall of 1961 I went to England for a year, and then went over to Geneva to World Health. I came back here in 1962--I had been gone on a leave of absence. Dr. Cameron had a grant and he put me on a salary for a year on his grant. In the meantime I applied to the National Institute of Health for a Career Research award, which was salary support for five years under their program at the time. This meant that they deposited my salary with the University, and I had University title and rank and perquisites and so forth. Then I applied separately for research funds from NIH.



So I had both of those going for eight years, and the experiment station also contributed some. In the last three or four years it's been almost all experiment station. But right now we're just starting October 1 on a \$300,000 contract with the USDA for some work with the vaccine; so we're well supported there for the next three years.

### Teaching Activity

*Besides your research load, you've got a pretty good teaching load too.*

Yes.

*What are the courses that you taught this last quarter?*

This last quarter I taught the Epidemiology and Preventive Medicine 211A, which is a three unit course for graduate veterinarians on how to approach a research project--how to plan it, initiate it, carry it out to completion, how to publish it, what journals to use, how to present the material orally; in fact, everything that they and most people should know about designing your research program and carrying it out without waste of money and time. This course then goes on for the next three quarters on more or less the seminar type, where they report in on the progress that they're making and what their problems are, if any. In the spring I teach the Zoonosis 212, which is a graduate course on the zoonotic diseases. So I have something going almost every quarter.

### Epidemiology And Preventive Medicine

*What have been the highlights of your changes in your department since you came here?*

I have to start this by saying that there's been a change in my life, because I was with the Department of Microbiology for twenty five years, and it's only been the last two years that I've been in Epidemiology and Preventive Medicine, which I feel is a much better place for me because that's the thrust of my work, primarily--in the zoonoses and the epidemiology of the zoonoses and the public health implications.



But it's been a very happy combination, because it gave me a chance to do all this basic work in the bacteriology before I made the transfer. Up until then I had been on a Career Research award and hadn't had teaching; so I was entirely oriented in research and was teaching to the veterinary students only within my own field at the moment. I had responsibilities for the lecture and laboratory for the brucellosis part, and then I helped teach in the Veterinary Microbiology 127 laboratory, which was human infectious disease. I feel that that background was very helpful, considering I had been from the School of Public Health, and had this chance in the basic bacteriology; now I can go back to my first love, public health-- and also teach, which comes at a good time in my life, really, to be able to and have a chance to do these things. I think I've had the most fascinating life with the University--I wouldn't have it any other way.

*Would you say something about the preventive medicine masters program? Is that a new program?*

Well, within the last five or six years. It's primarily designed to approach the control of disease on a herd basis--population basis--and designed to give veterinarians who have had all of their preliminary clinic training a broad view of herd medicine. It's approached from an epidemiological standpoint, from a statistical standpoint, and from what they call the shoe leather epidemiological point of view, and also from the point of view of developing an inquiring mind by having a project that they have to do and write a paper on. It's supported primarily by the foreign governments--we usually have two students in the course, and maybe three or four of those will be American and the rest will be from other countries, because this is where the great need is right now. There's been a backlog of people trained for the USDA for various state departments of agriculture. South American governments, through Pan American Health, supply about four or five students a year; Iran in the mideast; India; the various African countries, particularly Nigeria and Kenya, supply two or three students a year; Nepal had one, two years ago.

So this is the area in which they can go back to their countries and serve the greatest need at the time and help the greatest number of people and the greatest number of animals that an individual alone can do, rather than treating an individual animal--treating a whole herd or a whole area, or a whole country if it's small enough.



## Professors I Have Known

*In addition to Dr. Cameron, who are the most significant members of the faculty, either here or at Berkeley that you have either been a student of or associated with?*

Well, Dr. K. F. Meyer, for one; I had him for bacteriology.

*Would you say whatever anecdotes or material dealing with Dr. Meyer that occurs to you?*

One of the things I remember most clearly about one of the things he said in bacteriology--even in 1942 and '43, before there was a great deal of work done on individual chemicals that may be part of a bacteria or individual separate chemicals that the bacteria may use--was that someday they're going to identify bacteria completely on either the chemicals they use or the chemicals that are in them. This is very much coming to be right now. As a matter of fact, I ended up doing some of that work, and at the time I kind of laughed at him. I really hadn't given too much thought to him as a student, except that he was rather frightening--he was big in stature and he was overpowering; he was dictatorial and a martinet--and when he showed up, you knew you better show up too.

Dr. Bernice Eddy pretty well handled the laboratory. Dr. Meyer would come over from San Francisco, where he was with the Hooper Foundation, to give the lecture on Friday afternoon. He usually made a kind of a filibuster out of it; it was from two to six or seven in the evening. The span of concentration wasn't that long, but actually he had a great deal to say; it's too bad he didn't break it up in smaller packages so you could comprehend it a little better. I think he grew in my mind's eye in stature as I got out into the profession and realized the amount of work that he had done, and the regard with which he was held by his colleagues. As a student he was something to be feared, rather than loved.

*Was he a good lecturer?*

Yes. The only trouble was that once you turned him on you could never turn him off [laughs]; he went on and on and on. He'd usually start out on the subject--he'd



give a good discussion on the subject at the moment that was the topic for the day on the agenda for the course; but this would lead him on to reminiscing, so that we could end up with a travelogue on Africa, or the life history of the flea, or whatever would be brought to his mind by what he was talking about. While it was fascinating, because the breadth of the man was astounding.

I have had contact with Dr. K. F. Meyer in a professional way after I did the work on brucellosis; in fact, he had done a lot of work on *Brucella* and on brucellosis and then got interested in psittacosis and many other things and wasn't actively working in the laboratory on the disease. So he sent me all of the cultures he had stored at Hooper Foundation from probably around 1927-28 on up until the 1940's, which provided me with a wealth of material.

He was the one that supported my nomination for membership on the International Taxonomy Committee; in fact, I have that letter from Dr. Meyer, and I think now that he's gone I'll take it home and frame it-- he did this for very few women that I know of. In fact, he usually had a dim view of women; he thought they ought to be in the kitchen and not the laboratory, and he was most outspoken on the subject. So I felt that when he was willing to send me these cultures--and after that whenever strains were sent into the Hooper Foundation he would send them up here with a note, "You identify it; you know as much about it as I do now"-- that it was really something else, coming from Dr. Meyer, and I was always pleased about it. In the last several years now I haven't had much contact with him, because he retired and was less accessible for people to come in, so that my impression of him was at the time of his greatest vigor, which I think is nice--when he was doing his most work.

*Your own antecedents weren't from Switzerland? There's no genealogy.*

No. My antecedents on my father's side were from Hamburg, Germany.

*Did you know George Hart at all?*

Yes, as a matter of fact, I think I've already mentioned that I was first interviewed by him when I came to Davis looking for a position in one of the laboratories, and that I had frequent contact with him until he retired. He was the dean here. I audited one of his courses in reproductive physiology when he was still in the Animal Science Department. He was, I think, much underrated for his capabilities perhaps more so after he came into the veterinary school. It grew so fast that individuals then didn't stand out as they had when they were in the smaller departments, and maybe this is one of the things that



happened to Dr. Hart. He was very soft-spoken and maybe he just didn't make quite such an impression on people as you would expect a dean to make. But he helped establish the veterinary school, he helped with the budget and staffing--it must have been a tremendous amount of work to do this without a lot of publicity and fanfare that would normally accompany such a job, which he just didn't seem to have. He stayed until about 196-, I've forgotten when he retired--somewhere in the late fifties.

*What would you say were his outstanding strengths?*

He had been a very good teacher--that was one of his outstanding strengths. He was a good administrator because he got things done quietly--he didn't make a big fuss about it, which is perhaps why people didn't give him all the credit that he was due. He just did his work. One of the things I appreciated most about Dr. Hart was that you always knew where he stood and where you stood; you didn't have to wonder what was going to go on. He'd make a decision and he stayed with it; you knew what the decision was and you knew that you'd have to live with it--that he wasn't going to vacillate on the matter. In this sense I think he was a strong administrator and a good one. Maybe some people viewed this as a bit of a martinet; on the other hand, things were moving fast and you couldn't have somebody that was indecisive. I think that because of that a great deal of the groundwork of this school just simply got done, period--and he did it.

*What were his weaknesses?*

I think he saved too much money at a time when we needed money for the school. He seemed to take pride in always turning back some of the budget, and at that time the budget should have been growing to expand the staff. In the early days, perhaps, there could have been better people hired if he had been willing to put a little more money into salary. But I don't know--this is an impression. Money doesn't solve everything, but it helps build buildings and it helps departments go. I think some of the early problems that were associated with the Veterinary School could have been handled a little more forcefully there at the times although eventually they worked themselves out. I would say that this is the only weakness I know of.

*Did you know Dr. Haring?*



Oh, briefly and casually. He used to come up from Berkeley, I met him on several occasions, and he'd come into the laboratory now and then, but I didn't know him closely at all. I knew who he was, and we could pass the time of day in a casual way, but that was about all.

*Did you know Jerry Beach?*

Not at all, no.

*Or Jacob Traum?*

Oh, yes, I knew Dr. Traum very well because he had been, of course, in brucellosis work. After he retired from Berkeley he had a laboratory upstairs for a long time as an emeritus. In fact, we were very fond of each other. He used to come down and talk a lot about the early days of brucellosis and how he recovered the first suis from swine--at that time it was known as the porcine abortus. He did that in 1914--he was the first one that isolated the suis in this country. He was a very kindly man, very interested in young people, very interested in his field of work. He'd go back and forth between here and Washington--he was a consultant with the United States Department of Agriculture and an emeritus here. I think he also had a lab or an office in Berkeley; he kind of made the circuit. He'd always stop by and say hello, and we'd always joke about going out for dinner and so forth. Yes, I remember him very fondly.

*Are there any other of the giants that you remember?*

You mean the giants in the field of brucellosis?

*In the field of veterinary medicine.*

I can't think of any right now. I've been in association with people outside of the University; I can think of several. But right now I can't think of any [within the University].



## Committee Work

*What Vet School committees have you served on?*

I've been on the Dean's Committee for Affirmative Action--getting more women and more minorities into employment both at the professional level and at the academic level; on the Recruitment for the Disadvantaged; and on the Admissions Committee.

*They all rather fit together, too, don't they?*

Yes, they do.

## Admissions Committee

*Let's talk, if you will, about the Admissions Committee. You are the current chairman for 1974-75?*

Yes, that's right.

*How long does the chairman remain--is it one year?*

The chairman remains for one year. Normally the sequence of events is that you're on the Admissions Committee for three years--the first year, of course, you take to learn; normally, if you're going to be a chairman it is during the second year; you stay on the third year to help the next committee. But there's always an overlap of at least two and usually three that have been on the year before, so that there is never a whole new committee that has to start from scratch.

*There are five members. Who are your co-committee?*



This year there's Dr. Robert Leighton, who's in small animal surgery; Dr. Gordon Thelen, who's also a small animal surgeon; Dr. Martin Drost, who's in the Department of Reproductive Physiology; and Dr. Charles Franti, who's also in the Epidemiology and Preventive Medicine as a statistician.

*This is the first time that a woman has been chairman?*

That's right. In fact last year was the first year that there's ever been a woman on the committee.

*We're making progress.*

[Laughs.]

*How many applicants were there for this new year?*

This year there were eight hundred and seventy-eight applicants for admission to the professional school, and there are ninety-four positions available in the freshman class. So this reduces it to about ten percent of the applicants who have any hope of admission.

*How does this compare to the Med School?*

I think it's roughly about the same. They admit more and they have more applicants; but it runs about ten or twelve percent of the people who apply that ultimately have a hope of getting in, just because of the sheer space available.

*What's the average fall-out rate?*

Once they're in Veterinary School? Almost none.

*That's amazing.*



Yes, it's amazing, but the applicants have all had at least three years of college required for admission--the average last year was four and a half years of college before admission to the professional school. The average grade point was 3.5. They are then screened in an interview to determine their maturity, their motivation, their stability, the length of their motivation--to see if they've just stayed entirely with books, or whether they're somewhat of a balanced individual. We try also to find out about marital harmony, because this is one of the areas of disaster--if the wife, particularly, hasn't been to college and doesn't understand that once in the professional school they're not going to be available in the evening; they're going to be studying weekends; they're not going to be there to take care of the children while the wife goes shopping, and so forth. The other area that we necessarily have to look into, although not on a personal basis, is to see if they're able to finance themselves through. We try to avoid having somebody drop out because they can't finance the last two or three years, or if there's going to be some kind of family discord that's going to disrupt things. After that, the school will help in every way possible, once a person is admitted, to see that they even get psychiatric care if this is needed, to get financial help, to get marital counseling, to get tutors for them--and this we've done, too. So this may account for the fact that there's little or no attrition rate. Major illness is about the only reason that students don't finish.

*Do you ask them about their health?*

Yes, we do; we ask them about their health.

*Is there a physical exam required?*

Yes, there is a physical exam required for admission to the University, and this is maintained through the Veterinary School; they have to satisfy the University that they're in sound health and that they have no defects.

*Who interviewed them? All the committee, or do you each take a portion?*

We each take a portion. We do it on one faculty member to one student [basis], mostly because of the time involved. We try to interview the top two hundred and fifty applicants, because out of the top two hundred and fifty are going to come the ninety-four most qualified. Part of this qualification is determined on interview; so we try to give them about an hour interview.



*Do you have a standard interview form--a check list of questions to ask each one?*

Last year we didn't actually have a form; we had a discussion beforehand on the general flow of the interview. But this year we are going to have a form, and we're going to have the Admission Committee be interviewed by a professional interviewer first--Mr. Eichenbach from Personnel.

We're going to have an afternoon session with him on how to give an interview, what kind of an interview--whether we want it structured or unstructured or some of both--how long it should take, how to keep it in your hands and not let a very bright student get it away from you, and exactly how to get some type of an evenness into the interview process from student to student and from faculty member to faculty member, so that there can't be complaints about how they had ten minutes and weren't given a good interview.

*How long does an interview last, on the average?*

From about forty-five minutes to an hour.

*Have some of the criteria--some of the questions, perhaps--been developed with the aid of any psychologists?*

No, up to now they haven't been. But we're hoping that Mr. Eichenbach, being an educational psychologist, will help us design some of the questions as well as the process. In fact, this is one of the things we want to do--at least have a few standardized questions that every student is asked, for some kind of a response. Last year one of the interviewers, who was apparently used to giving structured interviews, asked every student that he interviewed what they would do if a client couldn't pay their bill. This apparently got a variety of answers and caused some emotional distress in an interviewee as to what they would do, pressed--if the animal was dying and the person had been in before and hadn't paid their bill, what would you do? Send him away? Take care of the animal? Take him to court? How do you handle situations like this?

*If they'd read All Creatures Great and Small they'd know!*



That's right! [Laughs] I don't know if we'll ask this particular question, but we should have a few questions that each interviewer perhaps initiates the interview with, or some way to get the interviewee relaxed initially, so that they will talk freely. The idea is not to trap them. Most of the people that come to an interview have more to say than they've put on their application, and it's amazing what students don't put down to help themselves out. This has been a shock to me--that people don't know how to fill out application forms. They short themselves on it.

*Has the application form changed much over the last twenty-five years?*

No, I don't think it basically has. A few more things have been added to it, perhaps, in terms of wanting more detail, because more and more people are applying and you have to get down to a finer and finer line of differentiation as to who gets in and who doesn't get in. So the information gets more and more detailed as time goes along, and basically I think they're after the same information--motivation, maturity, experience, and of course your academic background.

*When you say experience, do you mean with veterinary medicine or veterinary science in some way? Or with animals?*

With animals, or with veterinarians--mostly just to see if they've had enough exposure to the profession to realize what it is that they're getting into. Most people associate the glamour of having a practice and being called doctor--is this what veterinary medicine means to them? Or have they been in and realize that dogs die--that owners have perfectly good dogs put to sleep because they don't want to take care of them anymore; the rigors of a large animal practice--do they know what it means to go out at midnight or one in the morning and help deliver a calf. Or is this some kind of a glamorous image that they really haven't got to the nitty-gritty on? That's basically what the experience is for. Then, if they're still motivated and they still think this is the field for them after they've experienced these things, it's a little more believable that they want to get into veterinary school.

*Have you done a demographic survey--has there been one--with the average age, for example?*



The average age of the admittees was twenty-three last year. It's been twenty-three and twenty-four years old.

*Has this been about the same age?*

This has been true for the last five years, yes, and I think it pretty well stays close to twenty-three and twenty-four years old. We have applicants that have completed all the pre-veterinary requirements at nineteen, which is astounding to me. They've been accelerated through high school and accelerated through college by taking courses by examination. But really at that age they are on the immature side to handle the profession when they get out of school; they'd be mature enough to handle the courses, certainly, and they are that bright. So we usually ask that they wait and reapply. So nineteen and twenty year olds are few and far between in school as freshmen--twenty-three and twenty-four is the average starting age.

*What percentage of your applicants have applied previously?*

In the total composition of the applicants I don't know how many have applied previously, but in the last year's class of ninety-four that were admitted, forty had applied at least once before.

*People tell me there's quite a sub-culture at Davis of applicants who have been denied admission but are hoping, and who support themselves until the next time.*

That's right. Forty percent of the class that was admitted had applied on a previous occasion, and some of them have applied more than twice. Within the general student population and the general population of Davis, the number of rejectees, when we're taking only ninety-four out of close to nine hundred applicants-- and this is accumulative from year to year to year--I imagine there's several thousand of them around that are looking for experience with veterinarians, that are literally pestering other parts of the University to get into graduate school. As a matter of fact, I gave a talk over at the Animal Science Department for their student faculty meeting at the beginning of the quarter. It was for the Animal Science Department to advise their majors on application to Veterinary School.



Since there's no major in the University now, as pre-veterinary majors they have to select zoology, genetics, nutrition, animal biology, wildlife biology majors. The animal science major has freshmen and sophomores, and there's four hundred and fifty of them that are pre-vets. Two hundred and twenty-five or more--it filled up the room--showed up for this meeting. What they wanted to know was what the Admissions Committee looks for when they go through your application, and how can you select from this mass of applicants the ninety-four most qualified?

*Do you get many applicants that are Ph.D.'s?*

Last year out of the group we had twelve Ph.D. applicants, yes.

*Is this a big plus in their favor?*

I think a little bit depends on the prevailing philosophy of the committee in a given year. The present committee, and the one last year, doesn't view it as a big plus because by the time they have gone through the rigors of the discipline of a Ph.D. they are restless as freshmen and sophomore veterinary students. Many times they've had some of the course work under different labels. The way the curriculum is now designed it is virtually impossible to excuse them from the class; the only way they could do it would be by examination, and this is disruptive to the freshman class.

The other thing is that, at least last year, the Ph.D.'s that were applying were applying because they were generally dissatisfied with teaching biological sciences and so forth. We felt that we didn't want somebody that was rejecting a profession when they had gone that far with it--if this was just a trial and error; if they didn't like teaching biology, maybe they could try veterinary medicine.

What I'm trying to say is they didn't have a long-term motivation toward veterinary medicine. There was one admitted who had a long-term motivation to be a veterinarian, but he wanted to do research in biochemistry of animal diseases. It was a matter of whether he should get his Ph.D. first or his veterinary degree first. Since Davis was crowded and the veterinary school also crowded--and at that time there were fewer applicants that were admitted; it was eighty instead of ninety-four--why, he got his Ph.D. first. Then he came back and there was no question about his motivation. The others--it just didn't seem that this was their first love at all. Plus, there's a philosophy that I have that people who have been through the University system or the state college system in California and have a bachelor's degree or a master's degree in another field like political science, teaching, economics-- they've had one very fine education at the taxpayers'



expense. I don't think it's fair to take them in preference to someone who hasn't had the chance; we haven't the luxury of that right now. If there were spaces going begging, it would be a different matter. I feel the same about the Ph.D.-- they've been through the California system and they've had an elegant education in large at the taxpayer's expense. I do not think it's fair for them to come back and say, "Now I want the taxpayers to support me through professional school." I feel strongly on this.

*What percentage of them are married?*

I think among the men it's about sixty percent, and lesser in the women.

*How many of them are women now?*

Last year twenty-six percent of the total applicants were women-- by chance, because we didn't look at anything else but qualifications. Twenty-six percent of the admittees were women.

*The catalogue of the 'fifties says that women don't have the strength to become veterinarians. How do you justify that today?*

I think that was put in as a cover-up [laughs]. I think it's true that most women are not attracted to large animal medicine because, it does take perhaps more strength. However, there are some women practicing large animal medicine, and they say it's not the brute strength, it's the technique with which you handle the animal; women are calm around an animal normally and they are perfectly capable of handling large animals; and with the sophistication of the restraint techniques and the restraining equipment that is even now portable, that it isn't the problem now that it was in the 'fifties, really. Plus the fact that I think that with the change in the attitude of society towards women in the professions this cover-up on strength, as they say in the jargon of the day, 'won't fly.'

*What is your policy on the disadvantaged?*



The general policy is that 'disadvantaged' should have a broad implication; it should not just be to a minority group. It's to anybody who has had a disadvantage in terms of educational opportunity, in terms of financial opportunity, or in terms of ethnic minority. But it cannot just be restricted to the colored or the Chicanos; it's got to extend to white disadvantaged, too. Last year we admitted several that were white that had had a very severely deprived educational opportunity from, say, high school on--been literally thrown out of the home and put on their own, and had been self supporting since, perhaps, their senior year in high school. Yet they had the qualifications, with good grade points, for veterinary school.

The same is true of both men and women, white, and with the racial minorities they are not given an advantage in grade points. But the point is that they can't be rejected simply because they're Black, which is what it used to be. So they still have to be able, in the opinion of both the committees--the Recruitment of the Disadvantaged and the Admissions Committee, which has the final say on that--to hold their own in the class of ninety-four, without having to get too much help to do so. It is not fair to the student to put them in a position where they may fail again. And it isn't fair to have the rest of the class held up while everybody has to slow down to go with the slowest. They should be in a fairly even academic capability group.

*So you have no quota system?*

No. No quota system at all. The way the Admissions Committee views it, we're not obligated to take a single one if they're not academically qualified. On the other hand we can take as many as are academically qualified to enter; so there's no quota one way or the other on how many or how few.

*What percentage this year would be called disadvantaged?*

I don't know yet; we haven't had a chance to go through it. Last year there were about fifty or sixty that applied directly through the disadvantaged program, and then there were several others that the Admissions Committee went through their folders and put them in that group because it was obvious that they either didn't know about the program or for some reason hadn't applied under it. It isn't that they're given special consideration, except in that they're reviewed with their own group.



*Is Career Day a successful day? Does this attract the disadvantaged?*

It has been attracting the disadvantaged--not in the numbers that we would have hoped for. I think Career Day is kind of the frosting on the cake--that it should be a recruitment project that goes on all year long, and that it start further down. The time to approach these people for considering professional education is at the end of their high school--even the senior year in high school to be sure they get college prep courses. The disadvantaged status extends to academic disadvantaged, which means they have either been to a high school that doesn't offer good college prep, or they went to a community college where they thought they didn't get an education equivalent to a university, so when they come up here they don't do as well--whatever the reason may be that they are not doing well, because they have not had the preparation, I just don't think you can take a person that's a senior in college and say, "Come into our recruitment program." We should take the juniors in high school and say that. I think this is where we have to make the emphasis now.

*What are some of the typical pressures that the committee faces?*

Up until this year we've faced a barrage of letters from congressmen, senators, legislators--what I call letters of persuasion, rather than letters of evaluation. I got permission from the dean and the associate dean that these letters would not be put in the applicants' folders until after the selection process, because the presence of a letter biased the committee against the student. We felt, "Doesn't he have sense enough to know we're trying to be fair, that we don't need letters like this to bring us to a point of fairness?"

Secondly, if he was qualified to get in and he had one of these letters, then the rumors go to the back of the building that you need political clout to get in. So the student never knew whether he got in because he was qualified or because he had pressure brought to the Admissions Committee. This year the committee is not having any of those letters in their purview at all.

*So you don't even know that those letters exist?*

None whatsoever, so you can't use them for or against the student--which is bound to happen. It's human nature that pretty soon if you read enough of those you're going to feel that....



*Letters of evaluation are solicited aren't they?*

That's right. In fact, it's required that a student have three letters of evaluation in his folder--from people for whom he's worked, preferably, to evaluate his maturity, dependability, perseverance, ability to get along with others, initiative; it's sort of a check list. It's not just a letter of recommendation; it's a letter of evaluation. I might add that evaluators are brutally honest [laughs]--it's amazing.

I would say that when an applicant wants to enter veterinary school, the first thing that they could do for themselves is to check out their evaluator [laughs].







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## Charles Nearing/Arthur Schmarak

### Interviewer's Notes:

This is an interview with Dr. Charles Nearing, Director of Instructional Media and his associate, Arthur Schmarak, Production Supervisor (producer-director for the School of Veterinary Medicine). It concerns audio-visual television and other technological aids to education.

It was conducted by A.I. Dickman.

The initial job was to start in the School of Veterinary Medicine and develop the use of closed circuit television in that school. My office was in Murray Hall, upstairs on the south side, and it was the hottest summer I remember (laughter). It was no air conditioning, and I actually had only half an office. They finally cleared out a photographic storage room for my technician—who was hired, by the way, a week or so before I was.

We started with the new of us. I was the coordinator and producer-director in television only, and he was the technical person. Between us we put together a package of equipment and asked to reserve rooms, as I remember, in Murray Hall for television.

Were you interviewed by Doug Prichard?

It's my impression that he wasn't here. I'm not sure. I do not remember. I remember Chancellor Mack, Vice-Chancellor Cook, Ed Spafford, and beyond that I really don't remember who was there.



## Charles Neuhoff/Arthur Schmarak

### Interviewer's Notes:

This is an interview with Dr. Charles Neuhoff, Director of  
Instrumental Methods and the Associate, Arthur Schmarak,  
Practice Supervisor (producer-director for the School of  
Veterinary Medicine). It concerns audio-visual television and  
other technological aids to education.

It was conducted by A.J. Dickman.



## Charles Nearing/Arthur Schmarak

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*Dr. Nearing, why and when did you originally come to UCD?*

It was somewhat of an odd thing. I was coming out here on a research trip from Michigan State because I was finishing my Ph.D. My friend in San Francisco, Matt, heard about it and called and asked me to allow time enough to go up to Davis while I was in Berkeley. So I came up to Davis and met Chancellor Mrak, and it turned into a job interview [laughs], which I had not expected at all. There were several vice-chancellors there, and they sent me out of the room. They asked me to come back in and said, "We have eight applications for this position, If you want it, it's yours." [Laughs.] So I thought about it for a few days and called and accepted. I came out here in July, 1962.

The initial job was to start in the School of Veterinary Medicine and develop the use of closed circuit television in that school. My office was in Haring Hall, upstairs on the south side, and it was the hottest summer I remember [laughs]--it had no air conditioning, and I actually had only half an office. They finally cleared out a pharmaceutical storage room for my technician--who was hired, by the way, a week or two before I was.

We started with the two of us. I was the coordinator and producer-director in television only, and he was the technical person. Between us we put together a package of equipment and cabled to twelve rooms, as I remember, in Haring Hall for television.

*Were you interviewed by Dean Pritchard?*

It's my impression that he wasn't here. I'm not sure; I do not remember. I remember Chancellor Mrak, Vice-Chancellor Cook, Ed Spafford, and beyond that I really don't remember who was there.



*How was the equipment used after you wired the twelve rooms?*

In a number of ways. The very first use was extremely hectic. My engineer-technician decided to buy some equipment made in England. It was sold and used in the United States, but not widely; but it was good quality black and white television equipment. We ordered it in early fall, as I remember, and the first use was to put on the annual Veterinary Association's School of Veterinary Medicine professional conference (it had been held every January).

They had used rented television in previous years (at least one or two years before that) for that conference, and this was the first time that the school was trying to do it on its own, so to speak. They would show demonstrations from the surgery rooms into the auditorium; that was the very first use. We couldn't get the equipment to work right, right up until the night before the conference started [laughs], and it was an extremely hectic experience.

[Schmarak] Were you videotaping in the beginning?

Not at the very beginning, but within a year yes. We bought one of the very early prototype (almost) Ampex two-inch tape helical scan recorders, which had approximately a forty to fifty percent chance of working on any given day [laughs].

*Did taping live surgery bother you or your technician?*

I do have this capability of fainting away at the sight of blood, so I was a little concerned about it. But it really didn't bother me. But I have, on occasion, had cameramen get white, with beads of sweat. I remember one time I told one of them to lock his camera in position and just sit down on the floor until he felt better, because he was going to keel over any minute. But, by and large, there hasn't been very much trouble that way.

I might say that the uses that first year . . . Dr. John Kendrick was one that had been very active in trying to get people interested in having television here. He was a large animal surgery person, so we used it in large animal surgery to some extent.



Dr. Larry Z. Mcfarland, who has since died, used it in anatomy quite a bit--in his anatomy lab to show his whole class the animal. Dr. Alida Wind, who is still here, used it in small animal surgery quite a bit. She told me once that for the first time, when the students got down into the laboratory they knew what they were going to see and what they were to do; it was really a tremendous improvement on her instruction.

Then, Dr. Ted Hage, who has since died, used it in radiology quite a lot. He got very interested in it and learned to operate the camera and the zoom lense, and the iris control, to bring out the characteristics of the radiograph. This really improved it tremendously, because he used to have to stop the class at intervals and have them come down and file by a row of radiographs; now he could show them all at once.

Then Dr. Hal Parker in animal physiology used it quite a lot. In fact, he has since equipped his own laboratory so he can use it all during his course when he teaches it.

Those were the early on users, as I remember. Dr. Cello used it in eye surgery some, on dogs; Dr. Wheat used it in large animal surgery early on some. When I got an assistant, finally, we got off into exotic animals somewhat. We went over to San Francisco one time and made a videotape on how to amputate an elephant's tail, for instance. I was over there one day and found them getting ready to operate on a full grown female tiger.

[Schmarak] We still have both of those tapes--exploratory surgery on a tiger's stomach.

I remember one time I was doing large animal surgery, and that's in a great big room, so we put our equipment right in the room (it was a portable console with portable cameras). We did some on the surgery on horses--horses' legs and heads. In bringing these horses in, some of them were very skittish, and they danced around a lot. I remember one time my cameraman was moving a little, and obviously making the horse nervous. I remember telling him, "Freeze; stay absolutely still." He finally got the message and did, and they got the horse fastened to the table eventually.

Another time they were fastening a horse to the table and the horse just started dancing all around. The cameramen pulled back, I was ducking down behind the console. But not very often--most of the time things went quite well.

Would you like to hear about the time we had the Regents' wives up here, when the Regents were meeting one year? Among other things, they thought it would be nice to show them some of the videotapes we had on campus.



*From the Vet Med School?*

Some were. I put together a little package, about three quarters of an hour long, to show them how we used it in the instruction. One of the things I showed, which turned out to be a mistake, I guess, was eye surgery. It was really very well done-- very clear, Dr. Cello did it. But I noticed about half the women looked out the window or down at the floor.

*Have you used techniques other than closed circuit television?*

Yes. I wasn't in charge of it, you see, so I wasn't close to it, but the veterinary people themselves--the faculty--had been using three and a quarter by four and a quarter slides for years, they had huge amounts of colored and black and white slides.

*Does your department also make slides at their request?*

We do, although the policy in recent years, when the School of Medicine came here, has been to have the Medical Illustration Services unit do that program. Some professors still do their own, in fact, one professor has his own movie camera--the department's movie camera--over there.

Early on they had a commercial photographer who had his equipment in the building--in Haring Hall. His name was Mr. Hardaker and he had two sons, I think about the time I came, he had died and his sons had taken over. But he apparently had been there years and years, and made slides and took pictures for the Vet School and for other parts of the campus, too.

Our big project was the vet hospital. That is quite well equipped for television, except that it's black and white instead of color. But there's cable in the building; there's a control room, we can originate in small animal surgery or large animal surgery; we also have portable equipment, and we can do things outside, showing the animals walking around and that sort of thing. The radiology department, under Dr. Morgan, has a fairly elaborate television use in instruction, because he was used to that from where he came before. In fact, he was a little upset to find out he wasn't in charge of it totally when he came to this campus.



*From a comparative point of view, how would the use of these facilities compare to med schools and other schools of veterinary medicine, as far as you know?*

In recent years I haven't been around all that much, but I used to say to Dean Pritchard of the Vet School early on, "Gee, I wish you'd keep an eye open when you go around to other campuses and tell me what the newer techniques are in this area." Invariably he said, "Look, we're so far ahead of the other vet schools, there's just nothing to tell you." So as far as vet schools go, I think we still probably are, except for the color part maybe, well ahead of most of them.

[Schmarak] I recently canvassed the vet schools, and there are only nineteen campuses, I believe . . . I took a small survey to see what kind of tape they were using, if they cataloged, if they released any of their materials, and if they would be interested in any of our materials if we did the same. The unanimous answer was, "Yes, of course. What have you got at U.C. Davis?" Three of the campuses said they are in the process of cataloging or are developing copyright policies to let the material off campus. But the vast majority of them said, in essence, "We're playing with television. We're using it to a small degree, but nothing of any major consequence at all. We hope to." So we still are, you're right, very far out in front.

*How about med schools?*

Well, that's a different story. There are a number of med schools that have used television. The med school has quite a bit of television equipment and does use it a lot. It also uses audio-visual in its instruction program--slides and audiotape slides. It also has done a little work in computer instruction under Dr. Walters and Dr. West. And then, of course, over in the hospital we have a small studio and control room that the mental health people use.

I might go back for just a minute, though. You did ask me about when I first came how I got campus-wide, or started to at least. What happened, as I remember it, was that sometime during the first year that I was here Chancellor Mrak called me over to his office one day and said he thought we ought to plan for campus-wide use of



television. This was before we had even thought of an audio-visual center, which came later. So he asked me where to build a studio and how much it would cost and things like that. The following year I really . . . I always was under campus-wide administration (I was under Vice Chancellor Cook at first). We did build a studio over in Olson Hall; in fact, we're still in it. We have some hopes of getting something better, but it doesn't look like this is the year to get it.

I do have one more incident to relate, and then I will have said most of what I remember off the top of my head. It really got quite exciting early on. On Picnic Day we would pipe live television from the operating room into the auditorium. We would do it all day long, and that auditorium would be crowded--just packed (that's Haring Hall--221, I guess they call it). I came up there one day [laughs] and they were carrying out a woman who had fainted dead away, and laid her on the floor out in the hall to recover.

Another time, when we changed from one hour to the next hour to let a new group in, there were actually two grown men having a fist fight outside the door, as to who was going to get in and who wasn't. So it really was pretty exciting at times [laughs].

*Art [Schmarak], what is your connection with the school?*

[Schmarak] I came to the campus thinking that I would be working in general campus production. We had a need over in health sciences when I got here a little over a year ago--which would be in January of '74--to do some more work with the Vet Med people. So I started producing and directing for them on a very small basis, and establishing meetings with the various departments, because the videotape library goes back . . . some of the recordings we still have go back to 1967, if I recall. Trying to update and to digest what was already on tape and what needed to go on tape has been an ongoing project that still isn't completed. It's a spare time kind of project. But meeting with department chairmen and determining what needs they have . . . We went to the hospital and recorded a complete demonstration on the UBE of the fiberoptic endoscope, which apparently isn't being used all that much in many places. Dr. Knight, who's been doing a lot of his work on super eight film, asked us to come out and do this demonstration on tape, which we did.



Very early in the spring we got a call from surgery, saying they wanted to try a new approach to the basic sophomore surgery class. That really tied up most of my time from then until September or October, because Vet Med 107 was structured to mandatory viewing, so they didn't have to fight for an audience. The tapes were to be viewed prior to every lab. We recorded twenty-some-odd surgeries, and they were in the syllabus to be done as homework prior to lab sessions. So we spent our summer recording some surgeries at the hospital, some here in Haring Hall, and editing them. I think when you look in perspective, some of the technical advancement that has gone on has enabled this service to grow a great deal more than what Dr. Nearing had in the beginning.

Oh boy, that's right.

[Schmarak] I asked a technician who's been working with me closely, who has been here now for six or seven years, what he saw as some of the major growth factors since he's been here. I'll tell you about those in just a minute.

In essence, the surgery series was the first one that was ever entered into as a one hundred percent commitment to the medium for a given course, and it proved to be very successful. The student response was extremely favorable, and so was faculty response. One of the things that we found, that came back to us surreptitiously, was that some of the students didn't bother to read the text, they watched the tapes to learn the surgery. I don't know if that's all that good; I don't want to replace the textbook yet. But the students said they were delighted to be able to watch the procedure before they cut into their very first living animal. This was all small animal surgery, and there were some basics: the surgical pack, and suture patterns, and what have you, that's applicable for small or large animals. It's a first, and I think we'll have more.



To go back just a little bit, things we take for granted now, made such great strides forward. We got our first seventy eight hundred about four or five years ago--that's an Ampex machine, but it edits the videotape electronically.

*Is it hand-held?*

[Schmarak] No, this is a large console; it's a very sophisticated machine. But it does electronic editing and it does it well and stably.

What was the cost of that?

[Schmarak] When I bought mine back in Michigan it was about \$10,000. It would be much lower today, of course. Ours are color machines now, with colored boards in them. The ability to edit lets you records let's say, as I did recently, Dr. Leighton, a three-hour surgery, and boil it down to its essentials, to fifty-three minutes. So if there's an excessive bleeder in a vessel we can eliminate that; the students know what a bleeder looks like after the initial demonstration of it. If there's some problem with instrumentation, or if something is slow in responding from an assistant you can edit out some of the non-essential portions of the teaching exercise. So the editing capability was one that gave us great flexibility with instructors. Of course, if the recording itself is on a reliable videotape machine, it's a tremendous help. As Dr. Nearing said, if you have a forty or fifty percent failure rate you can't always guarantee your faculty that you are a good service.

I was told that the portable truck just got viewfinder cameras in it, (I forget which year, but not that many years ago), and being in television for fifteen years, I take that for granted--that any camera has a viewfinder that a cameraman can see what he is looking at.



Apparently when the truck was first equipped to go out in the field it didn't have that kind of thing; so it was kind of guesswork camera work. When the truck was equipped with good, high quality gear, as it has been for the past several years, you get tremendous flexibility and, again, reliability.

Just having the truck at all was quite an improvement early on, because there were a lot of things they wanted to do that couldn't be done in the studio or the surgery room.

[Schmarak] I have done only two or three productions for Vet Med in the studio; all the rest of them have been out on location somewhere--from a corral to an operating room to a barn.

Now there are a couple of new developments, the Pilot Learning Resources Center (PLRC) was opened about three or four years ago. It's an auto-tutorial center. There are slide sets up there, and there are carrels that are wired directly to our television playback centers so that students can call and watch tapes that are stored down there for them. And there is a video cassette carrel; now there will be two, as a direct result of the Vet Med surgery course, because those twenty tapes during the last fall quarter were viewed something like nine hundred and eighty times. We have now ordered another cassette machine to go up in the PLRC. That's one of the two primary new strides forward, I think--one is the video cassette format.

You might mention the microscope television camera.

[Schmarak] Yeah, that's the other one I was going to get at. Those two, the fact that we have this ease of videotape handling now for the student, on a one-to-one basis--those tapes are there twenty-four hours a day. The log sheets show that at one o'clock in the morning or six o'clock in the evening--it doesn't matter; they go in and watch the tape. They don't need the technician, it's a simplified delivery system, and they take advantage of it. So that's good from an instructional point of view.



The other is color--the fact that we have been able to demonstrate our feasibility in black and white surgery and in black and white microscopic . . . We've done a substantial amount of things with the circulation people in medicine, plus the clinical pathology people in Vet Med, in studying blood slides. We take it back to the studio and edit five or six hours worth of microscopic observation, to find the precise twenty minutes worth of demonstration we want. And we use electronic pointing to make sure that everything's identified as it ought to be. Then we narrate these tapes and title them and insert graphics. So we have a level of sophistication now that we didn't have before.

The one drawback, as Dr. Nearing said, is that we want color. Well, we were able to demonstrate this fall, by borrowing some color equipment, that we could do a color surgery; we recorded one for Dr. Leighton. I think he's been in on a lot of firsts in this school. He did our first color surgery. It was a total hip prosthesis in a dog that apparently was fairly new in the literature and had not been committed to any kind of visual record anywhere. That tape is traveling out of the country already. But it is the first color surgery we were able to do.

I thought I'd be concerned about that, too, but I wasn't one for doing surgery. One of my girls had trouble when we did a venal puncture tape. In the middle of the recording the doctor could be heard saying, "Now just put your head between your knees." I knew he wasn't talking to the dog; well, it was our cameragirl [laughter]. But ever since then she's just been fine; she's done a lot of surgeries with us.

I have a more distinct advantage than Dr. Nearing: I stay out in the truck most of the time, I'm not right in surgery with them now. I think I was most delighted for that when we took the scent glands out of a skunk. Dr. Fowler called us over one day and said, "Could you please do this? Because it's very rare that we get to see it." We did it, and I pitied the poor people on the cameras--I thought we'd have to fumigate the cameras.



The color microscope camera that we have demonstrated has passed everybody's approval, including (as we mentioned) Dr. Schalm. Dr. Rhode said, "He's your expert--ask him." He thought the blood slides and the parasites on the cells looked phenomenally good. So we are keeping our fingers crossed. We understand it's Dean Pritchard's intention to fund our first color camera on this campus. Vet Med will be the first, and we are designing that as a small portable camera; it's very high quality. It needs a hundred and forty pound ancillary pack that's thirty feet away, but the camera itself is only ten pounds. We're going to adapt that for surgical uses, for stand up observation uses, and microscopic use. I think that when and if we purchase it, Vet Med will be very, very busy with production--extremely so, because they all want it in color.

And the exchange among campuses has got to be in color today, unfortunately. There may be some procedures that really can be done as well in black and white--I have to be honest about that; some basic things don't need color, perhaps. But by virtue of the level of our society's technological status, we have to be in color, people come to expect it. Whether your material is good or not, if it's in color it's acceptable off campus somewhere. And students get very interested in color television generally.

So I think we're finally going to get there. And, of course, with Med Sci One construction we will have a color studio, which is a great deal of Vet Med input, I understand--not just medicine.

Yes, the old Med Sci One was a sort of combined Med and Vet Med.

[Schmarak] Right. They very heavily supported color in that building, but I give them a lot of credit for thinking that they can't wait that long to get their first color camera. We will do it in very simplistic terms, being a one color camera system, but we'll shoot our footage and edit it to make it look like more than one camera.



I've seen the Vet Med Two blueprints once, and had some input with Dr. Parker on the committee. We don't plan a studio *per se*--it will be a studio, but it's not a full blown ones I hesitate to say "studio," but it is one that's designated for us, with large doors to the outside so that we can do animal surgery and bring large animals in. The Med Sci One studio is internal; we'd have to bring the animals through the corridors.

This is more a wet studio.

[Schmarak] Right. It is a wet studio. The Med School has a conventional studio. This one will have drains, and I have requested that they be peripheral floor drains so that our floors don't slope into a center drain and keep our cameras at an angle all the time. That's going to be worked in with it. But we will have access to bring large animals into a controlled environment for television purposes. The veterinarians have been very good about that. We try not to get in their way for demonstrating what they need, and they try to give us the extra mile to make quality television instruction for them. I think that's to their credit, because they realize that if they are going to invest the time at all, they may as well do it right if they possibly can. So we don't rush in.

In several of the surgeries we had surgical anatomy lectures going along with the surgery--graphics that were made by medical illustration to match up the internal organs. Primes were compared to the actual live specimen on the table, and the surgeon was assisted by the surgical anatomy instructor, who in this case was Dr. Carl Lohse. Dr. Lohse did a beautiful job, and the students responded so favorably; they want more surgical anatomy in their surgery videotapes--they like having it.



It's interesting to me that even though that course is over (it's only taught in the Fall quarter), the tapes are being watched consistently, both at the PLRC and there's another copy up in the Vet Med Hospital Library. I talked to a Vet Med senior student, and he said that he finds them very instructional; he wishes he had them when he was a sophomore, and he does indeed go in and watch them occasionally. That's nice to hear. So we know that we can do it.

We took another tack last fall, in doing some clinical pathology basic blood smear slide preparations--a drop of blood was taken and put on cover slips, treated certain ways. The instructor said, "I have sometimes up to a hundred students who have to see this procedure, and we spend hours getting four and six of them at a time around the table. This way we'll commit it to the videotape." He came to the studio and brought a lot of equipment with him, twice. This is Dr. Jain; I don't know how long Dr. Jain has been here?

Quite a few years.

[Schmarak] Has he? Well, he's extremely excited about television. I did some of the work with him on black and white, and I think we convinced him that it saved him time ultimately--he spent an entire day or two with us putting the first production together. But he captured exactly what he wanted to show, that he couldn't always find other times. I asked him how the lab went with these two experiments that we finished (these were with borrowed color cameras, and we finished two instead of the five that we wanted, and we used them the week after they were finished). He said, "I've never seen a lab like it. The students watched the tape, and they did the procedure. No silly questions." He left the video cassette machine in his lab with earphones so the students could go watch it again, in case they did not understand the first time through. But he said it was just remarkable I and they all did the procedure and it saved untold time.



This is much the same reaction we've had from the lab leaders in the surgery course. They've said that the students come in with a totally different attitude after watching the videotapes. They know what's expected of them and know the procedure. There are not redundant, superfluous questions; they just get right down to business. As a result of that (one of those lab leaders is Robert Hart, who is now in anesthesiology at the hospital) Dr. Hart wants us to do a series of tapes on basic instruction on hospital anesthesiology because his students are in rounds--he has juniors and seniors who are mixed and have to have this one-to-one instruction. They don't always get to it, because they're busy; their schedules are diverse, and so is his. So once this is committed to tape and in the library, he can tell them that that is where it is and to go watch it. But we're kind of holding, waiting for color.

Have you had any valid negative comments or reactions?

[Schmarak] Very few. The students are good discerning viewers, as I indicate in my paper ["Video cassette as a Prime Delivery System for the Teaching of Surgery," submitted for publication *Journal of Veterinary Medical Education*, Spring 1975.]. They'll tell us. They told us in writing that they don't like the lighting in some of the surgeries. On one of them they did not care for the editing; they thought it was too heavily edited--they wanted to see a little more of some of the stuff that was cut out.

One of the difficulties is that it takes really an appreciable amount of the professor's time to get it recorded.

[Schmarak] You've got to invest time to save time.



And it isn't exactly a criticism, maybe, but it does come hard to some of them who are very busy people.

[Schmarak] I talked to one of them in particular who said, "I know we should be doing more, and I'd like to do more. But I can't find the time to prepare it properly. When I do it in a lecture, if I make a mistake or if I'm not too clear, I'm there to answer and clear it up. But if it's on videotape, it had damn well be a good, concise presentation." And he's absolutely right.

We have a lot of unedited footage on our shelves, unfortunately. We capture and record something of an animal, and then we just can't find the time to get the doctor to come back and narrate what it is that we recorded for him. I would hope that we could clear up some of that in the coming year.

Anybody that visits--a veterinarian at another school that has never used television--if they could be taken around this school by Art or someone who is knowledgeable about it; it's just fantastic the difference in the quality of the instruction and the efficiency of the instruct

ion--how much faster the students learn some of these things.

[Schmarak] I'm hoping we can get some more of these repetitive projects--like the slide preparation-- committed to tape, basic laboratory procedures; basic instruction in handling of equipment, like the anesthesiology equipment. Of course, the surgery people I'm sure would have us record almost everything we could, because if we get a good surgery on tape it's worth all the lecture in the world about it. We are going to try to service as many departments as we can with out color stuff.



I think there are a lot of people standing back in the wings waiting for color microscopy--a lot of the pathology people, the anatomy people, are just eager and waiting until we get color. They would love to have color cameras on every one of the microscopes in everyone of their labs. They'd like it left permanently. The best thing that we can hope to do for them in the immediate future is to record what they want and put it on video cassette, and there will be video cassette playback equipment available in Haring that can come to their lab. It's the best you can do with one camera, and they're expensive.



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